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Report on the individual review of the annual submission of New Zealand submitted in 2017*

Note by the expert review team

Summary

Each Party included in Annex I to the Convention must submit an annual greenhouse gas (GHG) inventory covering emissions and removals of GHG emissions for all years from the base year (or period) to two years before the inventory due date (decision 24/CP.19). Parties included in Annex I to the Convention that are Parties to the Kyoto Protocol are also required to report supplementary information under Article 7, paragraph 1, of the Kyoto Protocol with the inventory submission due under the Convention. This report presents the results of the individual inventory review of the 2017 annual submission of New Zealand, conducted by an expert review team in accordance with the "Guidelines for review under Article 8 of the Kyoto Protocol". The review took place from 11 to 16 September 2017 in Bonn, Germany.

* In the symbol for this document, 2017 refers to the year in which the inventory was submitted, not to the year of publication.

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Abbreviations and acronyms

2006 IPCC Guidelines	*2006 IPCC Guidelines for National Greenhouse Gas Inventories*
AAU	assigned amount unit
AD	activity data
Annex A sources	source categories included in Annex A to the Kyoto Protocol
AR	afforestation and reforestation
Article 8 review guidelines	"Guidelines for review under Article 8 of the Kyoto Protocol"
BOD	biochemical oxygen demand
C	carbon
CER	certified emission reduction
CH_4	methane
CM	cropland management
CO	carbon monoxide
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CPR	commitment period reserve
CRF	common reporting format
EF	emission factor
ERT	expert review team
ERU	emission reduction unit
ETS	emissions trading scheme
FM	forest management
FMRL	forest management reference level
$FMRL_{recon}$	Recalculated forest management reference level
GHG	greenhouse gas
GM	grazing land management
HFC	hydrofluorocarbon
IE	included elsewhere
IEF	implied emission factor
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
KP-LULUCF activities	emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol
Kyoto Protocol Supplement	*2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol*
LULUCF	land use, land-use change and forestry
NA	not applicable
NE	not estimated
NEU	non-energy use
NIR	national inventory report
NO	not occurring
N_2O	nitrous oxide
PFC	perfluorocarbon
QA/QC	quality assurance/quality control
RMU	removal unit
RV	revegetation
SEF	standard electronic format

SF_6	sulfur hexafluoride
SIAR	standard independent assessment report
SWDS	solid waste disposal sites
UNFCCC Annex I inventory reporting guidelines	"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories"
UNFCCC review guidelines	"Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention"
WDR	wetland drainage and rewetting
Wetlands Supplement	*2013 Supplement to the 2006 Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories: Wetlands*

I. Introduction[1]

1. This report covers the review of the 2017 annual submission of New Zealand organized by the secretariat, in accordance with the Article 8 review guidelines (decision 22/CMP.1, as revised by decision 4/CMP.11). In accordance with the Article 8 review guidelines, this review process also encompasses the review under the Convention as described in the UNFCCC review guidelines, particularly in part III thereof, namely the "UNFCCC guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention" (decision 13/CP.20). The review took place from 11 to 16 September 2017 in Bonn, Germany, and was coordinated by Ms. Claudia do Valle, Mr. Nalin Srivastava and Ms. Karen Ortega (secretariat). Table 1 provides information on the composition of the ERT that conducted the review of New Zealand.

Table 1
Composition of the expert review team that conducted the review of New Zealand

Area of expertise	*Name*	*Party*
Generalist	Ms. Batima Punsalmaa	Mongolia
	Ms. Regine Röthlisberger	Switzerland
Energy	Mr. Christo Christov	Bulgaria
	Ms. Renata Patricia Soares Grisoli	Brazil
	Mr. Jos Olivier	Netherlands
	Mr. Tomoki Takahashi	Japan
IPPU	Ms. Valentina Idrissova	Kazakhstan
	Ms. Eva Krtková	Czechia
	Mr. Lorenz Moosmann	Austria
	Mr. Ole-Kenneth Nielsen	Denmark
Agriculture	Mr. Abdulkadir Bektas	Turkey
	Ms. Sanaa Enkhtaivan	Mongolia
	Ms. Olga Gavrilova	Estonia
LULUCF	Mr. Kevin Black	Ireland
	Mr. Emil Cienciala	Czechia
	Mr. Nagmeldin Elhassan	Sudan
	Mr. Doru Leonard Irimie	Romania
Waste	Mr. Richard Claxton	United Kingdom of Great Britain and Northern Ireland
	Mr. Jose Manuel Ramirez Garcia	Spain
	Ms. Violeta Hristova	Bulgaria
Lead reviewers	Ms. Idrissova	
	Mr. Nielsen	

2. The basis of the findings in this report is the assessment by the ERT of the consistency of the Party's 2017 annual submission with the Article 8 review guidelines.

[1] At the time of publication of this report, New Zealand had submitted its instrument of ratification of the Doha Amendment; however, the amendment had not yet entered into force. The implementation of the provisions of the Doha Amendment is therefore considered in this report in the context of decision 1/CMP.8, paragraph 6, pending the entry into force of the amendment.

The ERT has made recommendations that New Zealand resolve the findings related to issues,[2] including issues designated as problems.[3] Other findings, and, if applicable, the encouragements of the ERT to New Zealand to resolve them, are also included. The assessment by the ERT takes into account that New Zealand does not have a quantified emission limitation or reduction commitment for the second commitment period of the Kyoto Protocol inscribed in the third column of Annex B in the Doha Amendment to the Kyoto Protocol.

3. A draft version of this report was communicated to the Government of New Zealand, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

4. Annex I shows annual GHG emissions for New Zealand, including totals excluding and including the LULUCF sector, indirect CO_2 emissions and emissions by gas and by sector. Annex I also contains background data related to emissions and removals from KP-LULUCF activities, if elected, by gas, sector and activity for New Zealand.

II. Summary and general assessment of the 2017 annual submission

5. Table 2 provides the assessment by the ERT of the annual submission with respect to the tasks undertaken during the review. Further information on the issues identified, as well as additional findings, may be found in tables 3 and 5.

Table 2
Summary of review results and general assessment of the inventory of New Zealand

Assessment				*Issue or problem ID(s) in table 3 and or 5[a]*
Dates of submission	Original submission: 26 May 2017 (NIR), 26 May 2017, Version 2 (CRF tables), and 26 May 2017 and 25 June 2017 (SEF tables)			
Review format	Centralized			
Application of the requirements of the UNFCCC Annex I inventory reporting guidelines and Wetlands Supplement (if applicable)	1.	Have any issues been identified in the following areas:		
		(a) Identification of key categories	No	
		(b) Selection and use of methodologies and assumptions	Yes	E.9, E.11, I.31, I.32, L.3, L.4, W.5, W.6, W.8, W.9, W.10, W.13
		(c) Development and selection of EFs	Yes	E.8, E.13, I.23, L.1, L.5
		(d) Collection and selection of AD	Yes	E.1, E.13, E.26, W.18
		(e) Reporting of recalculations	No	
		(f) Reporting of a consistent time series	Yes	E.8, I.29
		(g) Reporting of uncertainties, including methodologies	Yes	I.22, I.25, I.28, I.30
		(h) QA/QC	QA/QC procedures were assessed in the context of the national system (see para. 2 in this table)	
		(i) Missing categories/completeness[b]	Yes	E.7, E.14, I.26, L.7

[2] Issues are defined in decision 13/CP.20, annex, paragraph 81.

[3] Problems are defined in decision 22/CMP.1, annex, paragraphs 68 and 69, as revised by decision 4/CMP.11.

Assessment			*Issue or problem ID(s) in table 3 and or 5[a]*
	(j) Application of corrections to the inventory	No	
Significance threshold	For categories reported as insignificant, has the Party provided sufficient information showing that the likely level of emissions meets the criteria in paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines?	No	I.24, W.16
Description of trends	Did the ERT conclude that the description in the NIR of the trends for the different gases and sectors is reasonable?	Yes	
Supplementary information under the Kyoto Protocol	2. Have any issues been identified related to the national system:		
	(a) The overall organization of the national system, including the effectiveness and reliability of the institutional, procedural and legal arrangements	No	
	(b) Performance of the national system functions	No	
	3. Have any issues been identified related to the national registry:		
	(a) Overall functioning of the national registry	No	
	(b) Performance of the functions of the national registry and the technical standards for data exchange	No	
	4. Have any issues been identified related to reporting of information on ERUs, CERs, AAUs and RMUs and on discrepancies reported in accordance with decision 15/CMP.1, annex, chapter I.E, taking into consideration any findings or recommendations contained in the SIAR?	No	
	5. Have any issues been identified in matters related to Article 3, paragraph 14, of the Kyoto Protocol, specifically problems related to the transparency, completeness or timeliness of reporting on the Party's activities related to the priority actions listed in decision 15/CMP.1, annex, paragraph 24, including any changes since the previous annual submission?	No	
	6. Have any issues been identified related to the reporting of LULUCF activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, as follows:		
	(a) Reporting requirements in decision 2/CMP.8, annex II, paragraphs 1–5	Yes	KL.4, KL.5, KL.6, KL.7, KL.8, KL.9
	(b) Demonstration of methodological consistency between the reference level and reporting on forest management in accordance with decision 2/CMP.7, annex, paragraph 14	No	
	(c) Reporting requirements of decision 6/CMP.9	No	
	(d) Country-specific information to support provisions for natural disturbances, in accordance with decision 2/CMP.7, annex, paragraphs 33 and 34	NA	
CPR	Was the CPR reported in accordance with the annex to decision 18/CP.7, the annex to decision 11/CMP.1 and decision	NA	

Assessment			*Issue or problem ID(s) in table 3 and or 5[a]*
	1/CMP.8, paragraph 18?		
Adjustments	Has the ERT applied an adjustment under Article 5, paragraph 2, of the Kyoto Protocol?	NA	
	Did the Party submit a revised estimate to replace a previously applied adjustment?	NA	
Response from the Party during the review	Has the Party provided the ERT with responses to the questions raised, including the data and information necessary for the assessment of conformity with the UNFCCC Annex I inventory reporting guidelines and any further guidance adopted by the Conference of the Parties?	Yes	
Recommendation for an exceptional in-country review	On the basis of the issues identified, does the ERT recommend that the next review be conducted as an in-country review?	No	
Question of implementation	Did the ERT list a question of implementation?	No	

[a] The ERT identified additional issues and/or problems in all sectors that are not listed in this table but are included in table 3 and/or 5.

[b] Missing categories for which methods are provided in the 2006 IPCC Guidelines may affect completeness and are listed in annex III.

III. Status of implementation of issues and/or problems raised in the previous review report

6. Table 3 compiles all the recommendations made in previous review reports that were included in the previous review report, published on 10 August 2017.[4] For each issue and/or problem, the ERT specified whether it believes the issue and/or problem has been resolved by the conclusion of the review of the 2017 annual submission and provided the rationale for its determination, which takes into consideration the publication date of the previous review report and national circumstances.

Table 3
Status of implementation of issues and/or problems raised in the previous review report of New Zealand

ID#	*Issue and or problem classification[a]*	*Recommendation made in previous review report*	*ERT assessment and rationale*
General			
G.1	Inventory planning (G.2, 2016) (G.3, 2015) Transparency	Prioritize resources to resolve the issues related to improving the transparency of the NIR in accordance with the detailed recommendations given under the different sectors.	Addressing. Transparency issues identified in ID# G.3 in the 2015 review report were resolved except for those listed under ID#s E.2, E.4, E.5, I.1, I.2, I.3, I.5, I.16, I.21, W.1, W.4 and W.7 in this report. Further transparency issues identified in the current review are being evaluated individually under the sectoral parts of this report in table 5.
G.2	QA/QC and verification (G.5, 2016) (G.8, 2015)	Strengthen QA/QC procedures related to consistency checks between information reported in the CRF tables and the NIR.	Addressing. The Party informed the ERT that the QA/QC process has been strengthened for the 2018 submission cycle. QC tools were adjusted to better support comparisons between the NIR and the CRF

[4] FCCC/ARR/2016/NZL.

ID#	Issue and or problem classification[a]	Recommendation made in previous review report	ERT assessment and rationale
	Adherence to the UNFCCC Annex I inventory reporting guidelines		tables. The QC tools are in beta version and additional tools for sector compilers will be operational for the 2018 submission. Specifically, the QC tools will identify high variations in the IEFs for each sector and category to ensure that if there is a high variation in an IEF between any two years, it is explained in the NIR. During the review, the Party provided the ERT with examples of QC checklists and a compilation of QA activities. In general, the checklists provide good documentation of QC actions undertaken. However, the ERT noticed that some sections were incomplete and there were some inconsistencies between the documentation of the quality management system in the National Inventory System Guidelines and the checklists.
Energy			
E.1	Fuel combustion – reference approach – liquid fuels – CO_2 (E.1, 2016) (E.6, 2015) (24, 2014) (27, 2013) Accuracy	Endeavour to separate naphtha and crude oil with a view to improving the transparency of the reference approach as well as the accuracy of the reporting of NEU of fuels and feedstocks.	Not resolved. New Zealand indicated in the NIR (p.348, table 10.2.2) that naphtha and crude oil are combined within the current data system, but that they will be separated within the new energy database once it becomes operational. However, the Party did not describe the plan or concrete steps to resolve this issue.
E.2	Fuel combustion – reference approach – liquid fuels – CO_2 (E.8, 2016) (E.21, 2015) Transparency	Report in the NIR on progress in addressing the recommendation on reporting naphtha and crude oil using aggregate values (see ID# E.1 above).	Addressing. New Zealand reported on the progress in addressing this recommendation (see ID# E.1 above). The Party should continue to report on progress until the recommendation in ID# E.1 above is implemented.
E.3	Fuel combustion – reference approach – liquid fuels – CO_2 (E.9, 2016) (E.7 and E.22, 2015) (24, 2014) (27, 2013) Comparability	Endeavour to incorporate disaggregated data for lubricants, petroleum coke and bitumen in the submission or, if this is not possible, report on progress in addressing the recommendation.	Not resolved. New Zealand indicated that these fuels are combined within the current data system but that they will be separated within the new energy database once it becomes operational. However, the Party did not describe in the NIR the plan or concrete steps to resolve this issue and did not report on the progress of this new energy database (see ID# E.1 above).
E.4	Feedstocks, reductants and other NEU of fuels – CO_2 (E.10, 2016) (E.23, 2015) Transparency	Improve the transparency of reporting on NEU of fuels by adding a table on energy uses and NEU of fuels for natural gas, together with associated emissions and the categories where these are reported.	Addressing. New Zealand provided a more detailed explanation in the NIR (section 3.2.3, p.58) as well as a chart showing the split of natural gas consumed for energy use versus NEU across the time series (p.59, figure 3.2.1). However, the NIR is still missing the table on energy uses and NEU of fuels for natural gas, together with associated emissions and the categories where these are reported, which would make clear the allocations of emissions between the energy and IPPU sectors and the notation keys to be used.
E.5	Feedstocks, reductants and	Review the notation keys reported for emissions from the different	Addressing (see rationale in ID# E.4 above).

ID[a]	Issue and or problem classification[a]	Recommendation made in previous review report	ERT assessment and rationale
	other NEU of fuels – CO_2 (E.11, 2016) (E.23, 2015) Transparency	categories in the energy and IPPU sectors.	
E.6	Feedstocks, reductants and other NEU of fuels – solid fuels – CO_2 (E.23, 2016) Adherence to the UNFCCC Annex I inventory reporting guidelines	Correct the emissions reported in CRF table 1.A(d) from kt C to kt CO_2.	Resolved. Emissions reported in CRF table 1.A(d) are in kt CO_2.
E.7	1.A.1.c Manufacture of solid fuels and other energy industries – solid fuels – CO_2, CH_4 and N_2O (E.12, 2016) (E.24, 2015) Completeness	Estimate and report emissions from on-site coal use in the coal mining industry or, if these emissions are considered insignificant, report them as "NE" and provide a quantitative estimate of the likely level of the emissions in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines in order for the ERT to be able to assess whether the sum of all gases and categories considered insignificant remains below 0.1 per cent of the national total GHG emissions.	Not resolved. During the review, New Zealand indicated that this recommendation has been included in the implementation plan for the 2018 submission.
E.8	1.A.2 Manufacturing industries and construction – solid fuels – CO_2 (E.4, 2016) (E.11, 2015) (28, 2014) Consistency	Critically assess whether the ETS EFs reviewed in 2009 are more appropriate for the estimation of emissions from solid fuels and report on this assessment.	Not resolved. The Party informed the ERT during the review that this recommendation will be prioritized for its next submission.
E.9	1.A.3.a Domestic aviation – liquid fuels – CO_2 (E.13, 2016) (E.25, 2015) Accuracy	Estimate CO_2 emissions from domestic aviation using a tier 2 or 3 methodology, in accordance with the 2006 IPCC Guidelines.	Not resolved. During the review, New Zealand indicated that the Ministry of Transport is developing a domestic aviation fuel model that will use landing/take-off cycles. The Party plans to extend this model to estimate emissions in domestic aviation, but it will depend on the finalization of the fuel model and the emissions model, which are still in the early scoping stages. It is highly unlikely that these will be completed in time for the next annual submission, but they should be available for inclusion in the submission thereafter.
E.10	1.A.3.b Road transportation – liquid and gaseous fuels – CO_2 (E.14, 2016) (E.26, 2015) Adherence to the	Continue to estimate the CO_2 emissions based on fuel sold, but report the CO_2 emissions disaggregated by vehicle mode using the data collected for the estimation of CH_4 and N_2O emissions as a good practice to verify the CO_2 estimates	Not resolved. New Zealand has not reported CO_2 emissions disaggregated by vehicle mode (cars, light-duty trucks, heavy-duty trucks and buses, and motorcycles) using the data collected for estimating CH_4 and N_2O emissions using the COPERT model, in order to compare with the CO_2

ID[a]	Issue and or problem classification[b]	Recommendation made in previous review report	ERT assessment and rationale
	UNFCCC Annex I inventory reporting guidelines	obtained with a tier 1 approach; if discrepancies occur between the top-down and bottom-up approaches and cannot be solved in the 2016 submission, continue to report CO_2 emissions aggregated, but investigate and describe in the NIR the possible reasons for the discrepancy in the results of the comparison.	estimates obtained using a tier 1 approach.
E.11	1.A.3.b Road transportation – liquid fuels – CH_4 and N_2O (E.19, 2016) Accuracy	Apply the procedure for validating vehicle kilometres travelled with fuel statistics data before estimating CH_4 and N_2O emissions with the COPERT IV model and describe this procedure in the NIR.	Addressing. New Zealand reported in the NIR (p.87) that a project has been initiated in conjunction with the Ministry of Transport to validate road transport fuel statistics with vehicle-kilometre data by vehicle type. During the review, the Party explained that the calculation using the vehicle fleet model had recently been completed by the Ministry of Transport, and provided a spreadsheet with the values. The ERT noted differences between the fuel sold data and the data for vehicle kilometres travelled, and New Zealand indicated that it will take some time to explore these differences.
E.12	1.A.3.e.i Pipeline transport – gaseous fuels – CO_2, CH_4 and N_2O (E.24, 2016) Comparability	Improve comparability by reporting combustion emissions for pipeline transport under category 1A.3.e.i (pipeline transport), as required by the 2006 IPCC Guidelines.	Resolved. Pipeline transport has been recategorized from 1.A.1.c to 1.A.3.e.i (see NIR, section 3.3.7, p.85).
E.13	1.A.4.c Agriculture/ forestry/fishing – liquid fuels – CH_4 and N_2O (E.22, 2016) Accuracy	Collect separate AD for off-road vehicles and other machinery, fishing and stationary combustion activities in this category, and estimate CH_4 and N_2O emissions by applying appropriate EFs for mobile combustion and stationary combustion.	Addressing. New Zealand indicated in the NIR (p.90) that a project has been initiated to apply appropriate data techniques to disaggregate AD for fisheries and off-road activities under category 1.A.4.c, in order to estimate CH_4 and N_2O emissions along with the use of appropriate EFs. Progress will be reported in the next annual submission.
E.14	1.B.1.a Coal mining and handling – solid fuels – CH_4 (E.17, 2016) (E.31, 2015) Completeness	Estimate CH_4 emissions from abandoned mines (category 1.B.1.a.i) or, if these emissions are considered insignificant, report them as "NE" and provide a quantitative estimate of the likely level of the emissions in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines.	Addressing. New Zealand reported emissions in CRF table 1.B.1 and informed the ERT during the review that these emissions are from a single mine that is currently under maintenance and being flooded. For the other abandoned mines there is no reliable information to report emissions. The Party explained in its NIR (p.497, table A6.2.1) that a project to evaluate abandoned mines shows that CH_4 emissions from abandoned underground mines do not occur in the North Island; for the South Island this project is still ongoing.
E.15	1.B.1.a Coal mining and handling – solid fuels – CH_4 (E.25, 2016) Accuracy	Either document in the NIR that the CH_4 EF applied for surface mining is representative of national circumstances in New Zealand or use the CH_4 EF for surface mining provided in the 2006 IPCC Guidelines and report the results of this change in the NIR.	Resolved. New Zealand has used the 2006 IPCC default value, the average EF of 1.2 m^3/t (1.2*0.67 = 0.8 kg CH_4/t) (see NIR section 3.4.1, p.92).

ID[a]	Issue and or problem classification[a]	Recommendation made in previous review report	ERT assessment and rationale
E.16	1.B.1.a Coal mining and handling – solid fuels – CH_4 (E.26, 2016) Transparency	Improve transparency by describing in the NIR the rationale for the choice of CH_4 EFs for underground mining of bituminous and sub-bituminous coal, as well as by providing a description of the number and types of coal mines active in New Zealand.	Addressing. New Zealand described the rationale for the choice of CH_4 EFs in the NIR (section 3.4.2, p.91) but it is still missing a description of the number and types of coal mines active. During the review, New Zealand informed the ERT that there were 18 coal mines operating in 2015. Only two of these were underground mines: one has since been placed in care and maintenance and is being flooded (see ID# E.14 above), and the other has closed. The two largest open-cast operations, at Stockton and Rotowaro, accounted for 58 per cent of national production. One company, Solid Energy, was responsible for about 73 per cent of national production, but was placed in voluntary administration in August 2015. A number of smaller private coal mining companies produce the remainder. The ERT is of the view that this description of coal mines has to be included in the next NIR.
E.17	1.B.2.b Natural gas – gaseous fuels – CH_4 (E.18, 2016) (C.32, 2015) Comparability	Report CH_4 emissions from natural gas processing (category 1.B.2.b.3) as "IE" and clearly explain in the NIR the allocation of the fugitive CH_4 emissions from the Kapuni gas treatment plant.	Resolved. During the 2016 review New Zealand indicated that fugitive CH_4 emissions from the Kapuni gas treatment plant were insignificant and below the threshold indicated in decision 24/CP.19, annex, paragraph 37(b) (see ID# E.28, 2016), and therefore reported "NE" in CRF table 1.B.2 for natural gas processing (category 1.B.2.b.3) in the current submission and provided an explanation in the NIR, annex 6, table A6.2.1 (see ID# E.19 below).
E.18	1.B.2.b Natural gas – gaseous fuels – CO_2 (E.27, 2016) Transparency	Improve comparability by reporting CO_2 venting from natural gas processing in category 1.B.2.c.2 (gas venting).	Addressing. The CO_2 venting from natural gas processing (category 1.B.2.b.3) was reported in CRF table 1.B.2 under category 1.B.2.c.2 (gas venting). The Party provided further information in the documentation box. However, the Party has not updated the NIR to include this information.
E.19	1.B.2.b Natural gas – gaseous fuels – CO_2 (E.28, 2016) Transparency	Noting the recommendation in ID# E.18 (2016), if the Party chooses not to report CH_4 emissions from the Kapuni gas treatment plant, change the notation key used for fugitive CH_4 emissions from natural gas processing (category 1.B.2.b.3) from "NO" to "NE", and describe these emissions in the NIR as well as provide a justification for their insignificance in accordance with decision 24/CP.19, annex, paragraph 37(b).	Addressing. As noted in ID# E.17 above, New Zealand reported "NE" for category 1.B.2.b.3 in CRF table 1.B.2 and provided in its NIR (p.498, annex 6, table A6.2.1) a description and justification of the insignificance of these emissions in accordance with decision 24/CP.19, annex, paragraph 37(b). However, New Zealand has not included this information or made reference to table A6.2.1 under the source category description in NIR section 3.4.2 (p.93). In addition, the ERT noted that New Zealand has not updated the NIR (p.96) regarding category 1.B.2.b.3 (natural gas processing) and still reports that "Vector Ltd, operator of the Kapuni gas treatment plant, supplies estimates of CO_2 released during the processing of the natural gas".
E.20	1.B.2.c Venting and flaring – liquid fuels – CO_2 (E.29, 2016) Transparency	Describe the allocation of emissions from hydrogen production under the IPPU sector and the underlying reason for it (i.e. confidentiality) in the NIR.	Resolved. New Zealand has indicated in the NIR (section 3.4.2, p.94) that venting of CO_2 resulting from hydrogen production at oil refineries is included in the IPPU sector in order to protect the confidentiality of individual companies.

ID[a]	*Issue and or problem classification*[b]	*Recommendation made in previous review report*	*ERT assessment and rationale*
E.21	1.B.2.d Other (oil, natural gas and other emissions from energy production) – CO_2 (E.30, 2016) Transparency	Describe in the NIR the rationale for excluding the geothermal sites from the inventory.	Resolved. New Zealand has described the rationale for excluding the geothermal sites from the inventory in its NIR (section 3.4.2, p.93).
IPPU			
I.1	2. General (IPPU) (I.1, 2016) (I.2, 2015) (37, 2014) (42, 2013) Transparency	Include in the NIR detailed information and methodological descriptions on how plant-specific data are estimated.	Addressing. The Party has provided a more transparent description for category 2.C.1 (iron and steel production) (see ID# I.12 below). However, there is still a need to increase the level of plant-specific information for the other categories that use data from New Zealand ETS, by including in the NIR the information contained in the relevant regulations of New Zealand ETS as mentioned in ID#s I.2, I.3 and I.5 below.
I.2	2. General (IPPU) (I.12, 2016) (I.15, 2015) Transparency	Incorporate in the NIR the information available in the ETS regulation, including that regarding coverage and methodologies used for reporting, as well as the additional information not included in the ETS regulation but provided to the ERT during the review on, for example, the frequency of measurement.	Not resolved. New Zealand makes reference in the NIR (section 4.2.2, p.109) to relevant regulations (New Zealand Government, 2017). However, the Party has not included in the NIR information such as coverage, methodologies used for reporting and the frequency of measurement (see ID#s I.1 above and I.3 and I.5 below).
I.3	2.A.1 Cement production (I.2, 2016) (I.3, 2015) (36, 2014) (40, 2013) (60, 2012) Transparency	Continue with efforts to improve the transparency of the reporting regarding information on cement production by providing more detailed information in the NIR, while maintaining the confidentiality of the sensitive data.	Addressing. No additional information has been provided in the 2017 NIR, compared with the 2016 NIR. The Party further informed the ERT that there are only two cement companies and the AD are confidential and protected by stringent provisions relating to commercial confidentiality and therefore will not be included in the NIR, but the confidential information can be provided to the ERT on request. The ERT agrees with the explanation as the confidential information can be provided to the ERT during the review, but considers that the Party can resolve this issue by providing more transparent information while maintaining confidentiality, with the inclusion in the NIR of the information contained in the relevant regulations of the New Zealand ETS, as mentioned in ID# I.2 above.
I.4	2.A.2 Lime production – CO_2 (I.26, 2016) Adherence to the UNFCCC Annex I inventory reporting guidelines	Correct the year for emission estimates from lime production in the NIR (p.104) and reassess the related QA/QC check in order to avoid similar errors.	Resolved. The error has been corrected in the NIR (section 4.2.2, p.108) and the Party is now making reference to 2015, as expected.
I.5	2.A.3 Glass production – CO_2 (I.3, 2016) (I.4, 2015) (36, 2014) (40, 2013) (60,	Continue with efforts to improve the transparency of the reporting regarding information on glass production by providing more detailed information in the NIR.	Addressing. New Zealand improved the information in the NIR (section 4.2.2, pp.108 and 109). The Party indicated that there are two glass companies in New Zealand, with emissions from the use of soda ash and limestone in the process

ID#	Issue and or problem classification[a]	Recommendation made in previous review report	ERT assessment and rationale
	2012) Transparency	while maintaining the confidentiality of the sensitive data.	and these emissions are reported under categories 2.A.4.b (soda ash) and 2.A.4.d (other) respectively, for confidentiality reasons. But it is still necessary to include in the NIR the information contained in the relevant regulations of the New Zealand ETS, as mentioned in ID# I.2 above.
I.6	2.A.4 Other process uses of carbonates – CO_2 (I.4, 2016) (I.5, 2015) (36, 2014) (40, 2013) (60, 2012) Transparency	Continue with efforts to improve the transparency of the reporting regarding information on limestone and dolomite use by providing more detailed information in the NIR, while maintaining the confidentiality of the sensitive data.	Resolved. New Zealand improved the transparency of the reporting and explained in the NIR (section 4.2.2, p.108) that under category 2.A.4.d (other) are reported emissions from limestone used in categories 2.A.3 (glass production) and 2.C.1 (iron and steel production) (see also NIR section 4.4.2, p.117). The Party also explained that "a very small amount of CO_2 from coke and electrode use at the steel plant is also included" because it is not possible to disaggregate from the limestone data provided by New Zealand Steel. The Party further explained that emissions from these categories are allocated under category 2.A.4.d to maintain confidentiality of the glass industry (see ID#s I.5 above and I.8 and I.12 below).
I.7	2.A.4 Other process uses of carbonates – CO_2 (I.5, 2016) (I.6, 2015) (36, 2014) (40, 2013) (60, 2012) Transparency	Continue with efforts to improve the transparency of the reporting regarding information on soda ash use by providing more detailed information in the NIR, while maintaining the confidentiality of the sensitive data.	Resolved. New Zealand improved the transparency of the reporting and explained in the NIR (section 4.2.2, p.108) that under category 2.A.4.b are reported emissions from soda ash used in categories 2.A.3 (glass production) and 2.C.3 (aluminium production) (see also NIR section 4.4.2, p.117) to maintain confidentiality of the glass industry (see ID#s I.5 above and I.8 and I.12 below).
I.8	2.A.4 Other process uses of carbonates – CO_2 (I.27, 2016) Comparability	Reallocate emissions from iron and steel (which were reported under category 2.A.4) to iron and steel production (category 2.C.1) and recalculate CO_2 emissions from the iron and steel and the other process uses of carbonates categories in the annual submission.	Resolved. New Zealand explained that the current allocation is necessary to preserve confidentiality of data provided by the glass industry (see ID#s I.5 and I.6 above and I.12 below).
I.9	2.A.4 Other process uses of carbonates – CO_2 (I.28, 2016) Adherence to the UNFCCC Annex I inventory reporting guidelines	Correct the period of the AD for the glass production category in the NIR.	Resolved. The error has been corrected in the NIR (p.109) and the Party is now making reference to 2015, as expected.
I.10	2.B Chemical industry – CO_2 (I.29, 2016) Adherence to the UNFCCC Annex I inventory reporting guidelines	Correct the NIR description of the category chemical industry by removing coke as a chemical product in the annual submission.	Resolved. The error has been corrected in the NIR (section 4.3.1, p.111).
I.11	2.B.5 Carbide production – CO_2	Include the category carbide production in the NIR under chemical	Addressing. The category is mentioned in the NIR (section 4.3.1), but the methodology used, the

ID#	Issue and or problem classification[a]	Recommendation made in previous review report	ERT assessment and rationale
	(I.30, 2016) Transparency	industry, including information on the methodology used, choice of EF and source of AD for this category and review QA/QC checks related to this category.	choice of EF and the source of AD are missing from section 4.3.2.
I.12	2.C.1 Iron and steel production – CO_2 (I.8, 2016) (I.9, 2015) (36, 2014) (40, 2013) (60, 2012) Transparency	Continue with efforts to improve the transparency of the reporting regarding information on steel slab production by providing more detailed information in the NIR, while maintaining the confidentiality of the sensitive data.	Resolved. New Zealand provided more detailed descriptions in the NIR (section 4.4, p.114), and included a schematic flowchart of iron and steel production (p.116, figure 4.4.2). The Party also stated in the NIR (p.117) that CO_2 emissions from limestone used by New Zealand Steel Ltd (and a small amount of CO_2 from coke and electrodes) are reported under category 2.A.4.d to maintain confidentiality of the glass industry (see ID#s I.6 and I.8 above and I.13 below).
I.13	2.C.1 Iron and steel production – CO_2 (I.31, 2016) Transparency	Include information on the carbon balances for the iron and steel industry in the submission.	Resolved. AD for this category are reported as confidential in CRF table 2(I).A-Hs2 and therefore the Party has not provided the carbon balance in the NIR. However, during the review, the carbon balance was provided to the ERT. In addition, the Party included in the NIR a more detailed explanation of the carbon flows (p.116, figure 4.4.1) (see ID# I.12 above).
I.14	2.C.5 Lead production – CO_2 (I.32, 2016) Transparency	Include in the NIR information on the method and EF chosen for CO_2 emission estimates from secondary lead production, and reassess the QA/QC checks for this category in order to ensure consistency of the information between the NIR and CRF table 2(I).A-Hs2.	Resolved. New Zealand included in the NIR (section 4.4.2, p.118) information on the method used (tier 1 approach) which corresponded to a default EF of 0.2 t/t, which is in accordance with the 2006 IPCC Guidelines and is in line with the IEF reported in CRF table 2(I).A-Hs2.
I.15	2.D Non-energy products from fuels and solvent use – CO_2 (I.33, 2016) Adherence to the UNFCCC Annex I inventory reporting guidelines	Describe the AD for paraffin wax use and lubricant use in CRF table 2(I).A-Hs2 consistently with the description in the NIR, and reassess the QA/QC checks for these sources in order to ensure consistency of the information between the NIR and CRF table 2(I).A-Hs2.	Addressing. The AD for paraffin wax were described consistently in the NIR (section 4.5.2, p.120) and in CRF table 2(I).A-Hs2. For lubricant use, the CRF table still makes reference to "lubricant imports" while the NIR states that the amount of lubricant used is estimated from imports and changes in stocks. During the review, the Party explained that it will correct the CRF table in its next submission.
I.16	2.E Electronics industry 2.F. Product uses as substitutes for ozone-depleting substances 2.E Electronics industry – HFCs, PFCs and SF_6 (I.20, 2016) (I.23, 2015) Transparency	Include in the NIR all the information indicated in the section "reporting and documentation" of the 2006 IPCC Guidelines for these categories.	Addressing. New Zealand does not report emissions for category 2.E in the NIR (see section 4.6, p.122). For category 2.F, the description has been improved for metered dose inhalers (subcategory 2.F.4), but it is still missing more detailed information for the other subcategories under 2.F and for category 2.G, as indicated in the section "reporting and documentation" of the 2006 IPCC Guidelines (volume 3, chapter 7.5.4.2, p.7.60). Moreover, the Party has not implemented the recommendation in ID# I.2 above for these categories.
I.17	2.F.1 Refrigeration	Describe in the NIR the methodology	Addressing. New Zealand explained the

ID#	Issue and or problem classification[a]	Recommendation made in previous review report	ERT assessment and rationale
	and air conditioning – HFCs (I.37, 2016) Transparency	used to derive the 2 per cent decline in refrigerant charge in vehicle air-conditioning systems, and demonstrate that this methodology is in line with the splicing techniques in the 2006 IPCC Guidelines.	methodology used and that it is interpolating the data in accordance with the 2006 IPCC Guidelines (NIR section 4.7.2, p.124). During the review, New Zealand informed the ERT that a better description of the calculation related to the refrigerant charges will be added to the NIR. The ERT notes that the Party, when providing a better description of the calculations, should take into consideration the outcomes from ID# I.32 in table 5.
I.18	2.F.4 Aerosols – HFCs (I.35, 2016) Adherence to the UNFCCC Annex I inventory reporting guidelines	Correct the error identified in the AD description by correctly referring to HFC-134a as an HFC and not a PFC.	Resolved. The error has been corrected in the NIR (section 4.7.2, p.124).
I.19	2.G Other product manufacture and use – PFCs and SF_6 (I.36, 2016) Adherence to the UNFCCC Annex I inventory reporting guidelines	Remove the reference to HFCs in the use of PFCs in eye surgery.	Resolved. The error has been corrected in the NIR (section 4.8.1, p.128).
I.20	2.G.1 Electrical equipment – SF_6 (I.22, 2016) (I.25, 2015) Accuracy	Apply a methodology for the calculation of SF_6 emissions from electrical equipment in accordance with the 2006 IPCC Guidelines for all operators.	Resolved. New Zealand applied the recommended methodology in the calculation of SF_6 emissions for electrical equipment. However, only a small reference was provided in the NIR (section 4.8.2, pp.129 and 130). During the review, the ERT requested additional data and the Party provided the non-public document (CRL Energy Ltd, 2016) which describes in detail the methodology and the EFs used.
I.21	2.G.2 SF_6 and PFCs from other product use – SF_6 (I.23, 2016) (I.26, 2015) Transparency	Include in the NIR an explanation of the analysis of SF_6 emissions from SF_6 use in shoe and double-glazed window manufacture based on the information that was provided to the previous ERT as responses to questions and a background report.	Not resolved. No information on SF_6 use in the manufacture of shoes and double-glazed windows has been provided in the NIR. During the review, New Zealand indicated that it will include this information in the NIR for future submissions.
Agriculture			
A.1	3.B.1 Cattle – CH_4 (A.5, 2016) Transparency	Include more detailed information in the NIR on possible reasons for the significant inter-annual changes in the CH_4 IEF (e.g. the variability of typical climate events in New Zealand, the distribution of agricultural industries across New Zealand, commodity prices and improvements in breeding/genetics).	Not resolved. New Zealand informed the ERT that it will provide more comprehensive information on the causes of inter-annual changes in the CH_4 IEF in future submissions.
A.2	3.D.a.1 Inorganic N fertilizers – N_2O (A.6, 2016)	Correct the observed inconsistency between the NIR and CRF tables regarding N_2O emissions from	Resolved. New Zealand updated the NIR (section 5.5.2, p.179). No inconsistencies were found in the current submission for this category.

ID#	Issue and/or problem classification[a]	Recommendation made in previous review report	ERT assessment and rationale
	Adherence to the UNFCCC Annex I inventory reporting guidelines	synthetic nitrogen fertilizer use, and improve the QA/QC procedures related to this category.	
A.3	3.F Field burning of agricultural residues – CH_4 and N_2O (A.7, 2016) Adherence to the UNFCCC Annex I inventory reporting guidelines	Correct the inconsistencies between the NIR and CRF table 3.F relating to the field burning of agricultural residues, specifically reporting information in the NIR for the years for which GHG emissions are reported in the CRF tables, and improve the QA/QC procedures related to this category.	Resolved. New Zealand corrected the inconsistencies in the NIR (section 5.7) and provided a description for the category that covers all years for which GHG emissions are reported in the CRF tables.
LULUCF			
L.1	4. General (LULUCF) – CO_2, CH_4 and N_2O (L.2, 2016) (L.6, 2015) Accuracy	Review and, where necessary, update the carbon fractions of biomass applied in all categories using the appropriate values in the 2006 IPCC Guidelines.	Addressing. New Zealand updated in the 2016 submission the carbon fraction for forest land, where appropriate, and for low and high producing grassland, but not for grassland with woody biomass. During the current review the Party informed the ERT that for grassland with woody biomass, a carbon fraction of 0.50 is being used, following the tier 1 defaults provided in the 2006 IPCC Guidelines (volume 4, chapter 6, p.6.11). However, the ERT noted that NIR section 6.1.5 (p.219) states that carbon fractions used for some woody biomass classes are under category-specific planned improvements, but the Party has not explained exactly which kind of improvements and for which woody biomass it will be applied. (i.e. whether it goes beyond carbon fractions applied to forest land referred to in the NIR, section 6.4.6, p.274). The ERT also noted that on p.16 of the NIR tier 2 or tier 3 approaches have been used to estimate biomass carbon in grassland with woody biomass, which is not fully in line with the default value referred to above.
Waste			
W.1	5. General (waste) – CH_4 (W.2, 2016) (W.2 and W.5, 2015) Transparency	Provide, in the NIR, tables with information on AD (full time series) at the level at which the estimates are calculated or, where this is not possible owing to large amounts of data or for confidentiality reasons, provide summaries of AD at an appropriate level, to increase transparency and to allow the ERT to review the accuracy of the estimates and time series.	Not resolved. New Zealand explained that it is not currently practicable to report at the level at which calculations are done (including individual landfill sites). The Party further informed the ERT during the review that more AD will be reported in future submissions where possible, but it did not specify the time frame. The ERT acknowledges New Zealand's comment regarding the practicality of providing detailed AD, but refers to the possibility noted in the previous recommendation of summarizing AD at an appropriate level in this case.
W.2	5. General (waste) – CH_4, N_2O and CO_2 (W.10, 2016) Transparency	Noting the recommendation in ID# W.1 above (W.2, 2016) provide, in the NIR, tables with information on waste generation and various treatment options (with the full time	Not resolved. Tables were not provided in the NIR on waste generation or various treatment options. New Zealand outlined that improvements are planned for the reporting of activity data in the NIR but has not indicated the time frame for implementation. The Party also explained that it

ID[a]	Issue and or problem classification[b]	Recommendation made in previous review report	ERT assessment and rationale
		series).	may not be possible to report the full time series (see ID# W.1 above).
W.3	5.A Solid waste disposal on land – CH_4 (W.1, 2016) (W.1, 2015) (68, 2014) Transparency	Publish the reports provided to the ERT or make the information in the reports available by other means (e.g. by submitting a summary in the NIR).	Resolved. New Zealand provided additional information in the NIR. The Party also explained that the reports cannot be published in full because of confidential information but can be made available to ERTs during the review.
W.4	5.A Solid waste disposal on land – CH_4 (W.3, 2016) (W.6, 2015) Transparency	Provide a summary of AD (amount) for the entire time series by waste type and SWDS type as well as additional information on the source of the data.	Not resolved. New Zealand provided during the review the same explanation as in ID# W.1 above, and in addition explained that the NIR (p.317) makes it clear that few monitored data exist for non-municipal landfills, and none for farm fills.
W.5	5.A Solid waste disposal on land – CH_4 (W.4, 2016) (W.7, 2015) Accuracy	Provide substantive justification for the country-specific default values on CH_4 recovery efficiency, including justification for the factors that can enhance the recovery or revise estimates for CH_4 recovery at SWDS for which metered data are not available to 20 per cent, in order to be consistent with the guidance in the 2006 IPCC Guidelines.	Not resolved. During the review, the Party informed the ERT that it is currently revising all parameters and methods applied to emissions from SWDS but has not provided information about the time frame for implementation. The ERT could not find in the NIR transparent information on how the recovery efficiency for sites where metered data are not available is being considered. The ERT believes that future ERTs should consider this issue further to ensure that there is not an underestimate of emissions, noting that adjustments cannot be applied to New Zealand's annual submission.
W.6	5.A Solid waste disposal on land – CH_4 (W.5, 2016) (W.7, 2015) Accuracy	For the four sites where metered data are only available for one year, confirm the data used for each year, either by continuous monitoring of the CH_4 recovered from the sites or by using drivers such as electricity production using the recovered gas, in accordance with the 2006 IPCC Guidelines.	Not resolved. The Party informed the ERT that it is currently revising all parameters and methods applied to emissions from SWDS but has not provided information about the time frame for implementation (see the rationale in ID# W.5 above).
W.7	5.A Solid waste disposal on land – CH_4 (W.6, 2016) (W.8, 2015) Transparency	Provide data on the SWDS at which it is confirmed that CH_4 recovery takes place and data on the amount of CH_4 recovered for which metered data on the recovery are available in each future annual inventory submission. Provide this information separately for energy recovery and flaring. The information can be provided as an aggregate value for the SWDS in question.	Not resolved. New Zealand explained during the review that it is currently working on how these data can be reported in its next submission.
W.8	5.A Solid waste disposal on land – CH_4 (W.7, 2016) (W.9, 2015) Accuracy	Ensure consistency in the methodology and parameters used to estimate CH_4 generation across SWDS and, if the methodology and parameters are not from the 2006 IPCC Guidelines, justify that the methodology used applies to the	Addressing. New Zealand provides a justification in the NIR on the use of data from the United States Environmental Protection Agency for the calculation of CH_4 generation rates (k values) since the 2016 submission (see NIR p.321). However, a better justification for the use of the default value in the 2006 IPCC Guidelines should be provided

ID[a]	Issue and or problem classification[a]	Recommendation made in previous review report	ERT assessment and rationale
		national circumstances as well as improve the description in the NIR, when SWDS-specific parameters are used in the estimation of the CH_4 emissions from SWDS, by clarifying the sources for the parameters and providing the reasons why different parameters are used.	(see ID# W.9 below). During the review, the Party informed the ERT that it is currently revising parameters and methods applied to emissions from SWDS, but it has not indicated the time frame for implementation.
W.9	5.A.1 Managed waste disposal sites – CH_4 (W.11, 2016) Accuracy	Either provide a better justification for the country-specific rate constant for biodegradation in landfills for municipal solid waste, or calculate CH_4 generation for municipal landfills with the default rate constant k for biodegradation from the 2006 IPCC Guidelines.	Not resolved. New Zealand continues to apply a country-specific rate constant (k value) of 0.038–0.090/year for landfills with CH_4 recovery. During the review, New Zealand informed the ERT that it is revising its methodology for the estimation of emissions from SWDS and will include a review of the parameters. But it has not indicated the time frame for implementation (see ID# W.8 above).
W.10	5.A.2 Unmanaged waste disposal sites – CH_4 (W.12, 2016) Accuracy	Improve the DOC content of farm waste based on the average waste composition of the various farm wastes determined from local studies.	Not resolved. The DOC for farm-based waste was not revised. New Zealand confirmed during the review that it is currently revising parameters and methods applied to emissions from SWDS and will take this recommendation into account. But it has not provided a time frame for implementation.
W.11	5.B Biological treatment of solid waste – CH_4 and N_2O (W.8, 2016) (W.10, 2015) Completeness	Provide a quantified estimate of the potential emissions in the NIR so that the ERT can assess whether the sum of all gases and categories considered insignificant remains below 0.1 per cent of the national total GHG emissions.	Resolved. New Zealand has provided a justification for the exclusion of reporting of CH_4 and N_2O emissions from composting in terms of the likely level of emissions in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines in the NIR (annex 6, p.499) (see ID#s W.15 and W.16 in table 5).
W.12	5.D.1 Domestic wastewater – CH_4 (W.14, 2016) Accuracy	Verify whether the increased values of I (the correction factor for additional industrial BOD discharged into sewers) at specific domestic wastewater treatment plants are related to wastewater discharged by industries that are included in the industries contributing to emissions from industrial wastewater. If this is the case, apply the default value of I (1.25) for these plants to avoid double counting.	Resolved. The ERT noted that the current NIR still indicates that a range of higher BOD values are used for a number of domestic treatment facilities (NIR section 7.5.2, p.331). During the review New Zealand provided a report (Beca Infrastructure Ltd, 2007) with sufficient explanation supporting that industrial wastewater reported under category 5.D.2 is separate and additional to emissions from industries discharging wastewater into domestic wastewater treatment facilities (5.D.1). As such, the use of country-specific adjusted BOD values for domestic wastewater treatment plants (accounted for under category 5.D.1 in the CRF table) are considered justified based on national data.
W.13	5.D.1 Domestic wastewater – CH_4 (W.15, 2016) Accuracy	Calculate emissions from septic tanks assuming an I of 1.	Not resolved. New Zealand confirmed that it is currently revising parameters and methods applied to emissions from wastewater and will take this recommendation into account. But it has not provided a time frame for implementation.
KP-LULUCF			
KL.1	FM – CO_2 (KL.2, 2016) Transparency	Improve the transparency of the reporting of the $FMRL_{corr}$ by clearly separating the original FMRL, the various technical corrections and	Resolved. The information requested is included in the NIR (annex 5.1, p.479) (see follow-up in ID# KL.9 in table 5).

ID[a]	*Issue and or problem classification*[a]	*Recommendation made in previous review report*	*ERT assessment and rationale*
		their totals, and the $FMRI_{com}$.	
KL.2	FM – CO_2 (KL.3, 2016) Transparency	Report consistently across the NIR and the CRF tables by correcting the values of the "total technical corrections" in table 11.3.3 of the NIR (–17.26) and the corresponding value in annex 5.1 to the NIR and the CRF table "Accounting" (–17.25).	Resolved. Reporting of "total technical corrections" has been revised in the NIR and CRF tables of the current submission.

[a] References in parentheses are to the paragraph(s) and the year(s) of the previous review report(s) where the issue and/or problem was raised. Issues are identified in accordance with paragraphs 80–83 of the UNFCCC review guidelines and classified as per paragraph 81 of the same guidelines. Problems are identified and classified as problems of transparency, accuracy, consistency, completeness or comparability in accordance with paragraph 69 of the Article 8 review guidelines, in conjunction with decision 4/CMP.11.

IV. Issues identified in three successive reviews and not addressed by the Party

7. In accordance with paragraph 83 of the UNFCCC review guidelines, the ERT noted that the issues included in table 4 have been identified in three successive reviews, including the review of the 2017 annual submission of New Zealand, and have not been addressed by the Party.

Table 4
Issues identified in three successive reviews and not addressed by New Zealand

ID[a]	*Previous recommendation for the issue identified*	*Number of successive reviews issue not addressed*
General		
G.1	Prioritize resources to resolve the issues related to improving the transparency of the NIR in accordance with the detailed recommendations given under the different sectors	3 (2015–2017)
G.2	Strengthen QA/QC procedures related to consistency checks between information reported in the CRF tables and the NIR	3 (2015–2017)
Energy		
E.1	Endeavour to separate naphtha and crude oil with a view to improving the transparency of the reference approach as well as the accuracy of the reporting of NEU of fuels and feedstocks	5 (2013–2017)
E.2	Report in the NIR on progress in addressing the recommendation on reporting naphtha and crude oil using aggregate values	3 (2015–2017)
E.3	Endeavour to incorporate disaggregated data for lubricants, petroleum coke and bitumen in the submission or, if this is not possible, report on progress in addressing the recommendation	5 (2013–2017)
E.4	Improve the transparency of reporting on NEU of fuels by adding a table on energy uses and NEU of fuels for natural gas, together with associated emissions and the categories where these are reported	3 (2015–2017)
E.5	Review the notation keys reported for emissions from the different categories in the energy and IPPU sectors	
E.7	Estimate and report emissions from on-site coal use in the coal mining industry or, if these emissions are considered insignificant, report them	3 (2015–2017)

ID[a]	Previous recommendation for the issue identified	Number of successive reviews issue not addressed
	as "NE" and provide a quantitative estimate of the likely level of the emissions in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines in order for the ERT to be able to assess whether the sum of all gases and categories considered insignificant remains below 0.1 per cent of the national total GHG emissions	
E.8	Critically assess whether the ETS factors reviewed in 2009 are more appropriate for the estimation of emissions from solid fuels and report on this assessment	4 (2014–2017)
E.9	Estimate CO_2 emissions from domestic aviation using a tier 2 or 3 methodology, in accordance with the 2006 IPCC Guidelines	3 (2015–2017)
E.10	Continue to estimate the CO_2 emissions based on fuel sold, but report the CO_2 emissions disaggregated by vehicle mode using the data collected for the estimation of CH_4 and N_2O emissions as a good practice to verify the CO_2 estimates obtained with a tier 1 approach; If discrepancies occur between the top-down and bottom-up approaches and cannot be resolved in the 2016 submission, continue to report CO_2 emissions aggregated, but investigate and describe in the NIR the possible reasons for the discrepancy in the results of the comparison	3 (2015–2017)
E.14	Estimate CH_4 emissions from abandoned mines (category 1.B.1.a.i) or, if these emissions are considered insignificant, report them as "NE" and provide a quantitative estimate of the likely level of the emissions in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines	3 (2015–2017)
IPPU		
I.1	Include in the NIR detailed information and methodological descriptions on how plant-specific data are estimated	5 (2013–2017)
I.2	Incorporate in the NIR the information available in the ETS regulation, including that regarding coverage and methodologies used for reporting, as well as the additional information not included in the ETS regulation but provided to the ERT during the review on, for example, the frequency of measurement	3 (2015–2017)
I.3	Continue with efforts to improve the transparency of the reporting regarding information on cement production by providing more detailed information in the NIR, while maintaining the confidentiality of the sensitive data	6 (2012–2017)
I.5	Continue with efforts to improve the transparency of the reporting regarding information on glass production by providing more detailed information in the NIR, while maintaining the confidentiality of the sensitive data	6 (2012–2017)
I.16	Include in the NIR all the information indicated in the section "reporting and documentation" of the 2006 IPCC Guidelines for these categories	3 (2015–2017)
I.21	Include in the NIR an explanation of the analysis of SF_6 emissions from SF_6 use in shoe and double-glazed window manufacture based on the information that was provided to the previous ERT as responses to questions and a background report	3 (2015–2017)
Agriculture		
	No such issues for the agriculture sector were identified	
LULUCF		

ID	*Previous recommendation for the issue identified*	*Number of successive reviews issue not addressed*
L.1	Review and, where necessary, update the carbon fractions of biomass applied in all categories using the appropriate values in the 2006 IPCC Guidelines	3 (2015–2017)
Waste		
W.1	Provide, in the NIR, tables with information on AD (full time series) at the level at which the estimates are calculated or, where this is not possible owing to large amounts of data or for confidentiality reasons, provide summaries of AD at an appropriate level, to increase transparency and to allow the ERT to review the accuracy of the estimates and time series	3 (2015–2017)
W.4	Provide a summary of AD (amount) for the entire time series by waste type and SWDS type as well as additional information on the source of the data	3 (2015–2017)
W.5	Provide substantive justification for the country-specific default values on CH_4 recovery efficiency, including justification for the factors that can enhance the recovery or revise estimates for CH_4 recovery at SWDS for which metered data are not available to 20 per cent, in order to be consistent with the guidance in the 2006 IPCC Guidelines	3 (2015–2017)
W.6	For the four sites where metered data are only available for one year, confirm the data used for each year, either by continuous monitoring of the CH_4 recovered from the sites or by using drivers such as electricity production using the recovered gas, in accordance with the 2006 IPCC Guidelines	3 (2015–2017)
W.7	Provide data on the SWDS at which it is confirmed that CH_4 recovery takes place and data on the amount of CH_4 recovered for which metered data on the recovery are available in each future annual inventory submission Provide this information separately for energy recovery and flaring. The information can be provided as an aggregate value for the SWDS in question	3 (2015–2017)
W.8	Ensure consistency in the methodology and parameters used to estimate CH_4 generation across SWDS and, if the methodology and parameters are not from the 2006 IPCC Guidelines, justify that the methodology used applies to the national circumstances as well as improve the description in the NIR, when SWDS-specific parameters are used in the estimation of the CH_4 emissions from SWDS, by clarifying the sources for the parameters and providing the reasons why different parameters are used	3 (2015–2017)
KP-LULUCF		
	No such issues for KP-LULUCF activities were identified	

V. Additional findings made during the 2017 individual inventory review

8. Table 5 contains findings made by the ERT during the individual review of the 2017 annual submission of New Zealand that are additional to those identified in table 3.

Table 5
Additional findings made during the 2017 individual review of the annual submission of New Zealand

ID	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue and/or a problem? If yes, classify by type*
General			
G.3	Key category analysis	New Zealand provided a key category analysis following approach 1 of the 2006 IPCC Guidelines. The NIR (p.17) states that the key category analysis is used to prioritize inventory improvements. However, no specific examples are provided in the NIR. During the review, the Party provided examples of current activities related to inventory improvements for key categories. The ERT encourages the Party to include examples of current inventory improvements related to key categories in the relevant sections of the NIR.	Not an issue/problem
G.4	QA/QC and verification	The ERT noticed that very few QA activities were implemented in 2017. During the review, New Zealand explained that the QA/QC system is currently undergoing revisions which are not yet reflected in the National Inventory System Guidelines, and that an updated version will be produced in November 2017. With regard to QA activities, the Party informed the ERT that, in the aftermath of the earthquake in November 2016, resources had to be prioritized to ensure basic operation of the national system, and QA activities were postponed. The Party informed the ERT that the planned QA activities are: improvements to the IPPU sector in the next two years; and an adjustment to the national system under the Paris Agreement. The ERT encourages New Zealand to update its National Inventory System Guidelines, and proceed with the planned QA activities as presented during the review.	Not an issue/problem
G.5	Kyoto Protocol units	The SIAR identified an inconsistency between the SEF tables for the first commitment period and the international transaction log records on cancellations. The SIAR recommended that New Zealand resubmit those tables for the reported period. In response to a question raised by the ERT, New Zealand confirmed that the tables were resubmitted. The ERT assessed the updated SEF tables and concluded that New Zealand's records on its accounting of Kyoto Protocol units contained in its national registry are consistent with the corresponding records of the international transaction log.	Not an issue/problem
G.6	Annual submission	The 2017 annual submission from New Zealand was submitted on 26 May 2017; it contains a complete set of CRF tables and the NIR. The Party also submitted the SEF tables on 26 May (SEF-CP2-2016 and SEF-CP1-2016) and resubmitted SEF-CP1-2016 on 25 June 2017. The ERT noted that the submission was received after the deadline of 15 April. The ERT acknowledges that there were exceptional circumstances due to the impact of the earthquake of November 2016.	Not an issue/problem
Energy			
E.22	1. General (energy sector)	During the review, the ERT identified some errors and lack of information. The ERT recommends that New Zealand correct the following inconsistencies from the 2017 annual submission: (a) In the NIR (p.57) the Party indicated that the data for international bunkers are in CRF table 1.C. However, the correct report to "International aviation and international navigation (international bunkers) and multilateral operations" is in CRF	Yes. Adherence to the UNFCCC Annex I inventory reporting guidelines

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and/or a problem[b]? If yes, classify by type
		table 1.D;	
		(b) In the NIR (p.73), the key category identified in the trend assessment for manufacturing industries and construction, among others, is not "Food processing, beverages and tobacco – liquid fuels", but "Food processing, beverages and tobacco – gaseous fuels", according to table 3.1.1;	
		(c) In the NIR (p.79), the category "Cars – gasoline" was not indicated in the text on the trend assessment from the category transport, but according to table 3.1.1, this category was identified;	
		(d) In the NIR (p.88), the category "Residential gaseous fuels" was not indicated in the text on the level and trend assessments from other sectors; however, according to table 3.1.1, this category was identified.	
E.23	Fuel combustion – reference approach – liquid fuels – CO_2	In CRF table1.A(b) AD and emissions for other oil are indicated as "NO". However, in the documentation box the Party indicated that "imports of lubricants, petroleum coke and other oil are grouped together under bitumen. New Zealand does not have the data to disaggregate further".	Yes. Comparability
		The ERT recommends that New Zealand clarify whether AD for other oil occur in the country and, if so, report the notation key "IE" in CRF table 1.A(b); or correct the information in the documentation box by excluding the mention that emissions from other oil are grouped under bitumen, since these emissions are not occurring.	
E.24	Fuel combustion – reference approach – all fuels – CO_2	The ERT noted that the values for stock changes for all fuels (CRF table 1.A(b)) are different from those indicated in the New Zealand energy balance. During the review, the Party indicated that the sum of stock changes for oil and gas are the same in CRF table 1.A(b) and the energy balance; however, the allocation is different. For example, in CRF table 1.A(b) crude and refinery feedstocks are separated while in the energy balance they are combined; also, the energy balance table includes indigenous production of liquefied petroleum gas, while CRF table 1.A(b) does not allow this to be entered as production, so it is included in natural gas production and allocated to liquefied petroleum gas via stock change.	Yes. Transparency
		The ERT recommends that New Zealand provide in the NIR a comparison of the allocation of fuel consumption data used in the inventory (CRF table 1.A(b)) and in the energy balance.	
E.25	International aviation – liquid fuels – CO_2, CH_4 and N_2O	The ERT identified small discrepancies in the AD reported between CRF table 1.D and CRF table 1.A(b) for jet kerosene (international aviation bunkers) for all years. For example, for 2015, in CRF table 1.A(b) the value reported is 40.44 PJ while in CRF table 1.D it is 40.36 PJ.	Yes. Adherence to the UNFCCC Annex I inventory reporting guidelines
		The ERT recommends that New Zealand evaluate these differences between AD reported in CRF table 1.D and CRF table 1.A(b) for jet kerosene (international aviation bunkers) for all years and correct the identified discrepancies.	
E.26	1.B.1.a Coal mining and handling – solid fuels –	The ERT noted that New Zealand reported "NE" for CO_2 emissions for category 1.B.1.a.i (abandoned underground mines) while "NO" is reported for recovery/flaring of CH_4 in CRF table 1.B.1. According to the 2006 IPCC Guidelines (volume 2, chapter 4.1.5.3, p.4.28) CO_2 emissions should be accounted for only if CH_4 emissions are recovered or flared. The ERT noted an inconsistency in the reporting by the Party between "NO" for recovery/flaring and "NE" for CO_2 emissions. According to the 2006 IPCC Guidelines (p.4.28) the CO_2 emissions produced from combustion of CH_4 recovered from abandoned mines	Yes. Accuracy

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and or a problem[b]? If yes, classify by type
	CO_2	should be included in the energy sector, where there is utilization, or under fugitive abandoned mines, where there is flaring. The ERT recommends that New Zealand clarify in the NIR whether there are any emissions relating to CH_4 recovery/flaring under category 1.B.1.a.i (abandoned underground mines) that are not estimated. If emissions from recovery/flaring do occur, estimate the amount of CH_4 recovered in accordance with the 2006 IPCC Guidelines (volume 2, chapter 4.1.5.3, p.4.28). And if such emissions do not occur, change the notation key in CRF table 1.B.1 from "NE" to "NO".	
IPPU			
I.22	2.A Mineral industry – CO_2	New Zealand reported in the NIR (annex 2, p.438, table A2.1.1) the uncertainty analysis (including LULUCF) in accordance with approach 1 from the 2006 IPCC Guidelines. The ERT noted that for mineral industry the reported AD uncertainty is ±2 per cent and the EF uncertainty is ±7 per cent (for all CO_2 emissions reported from category 2.A). However, the ERT noted that in the NIR (p.110, table 4.2.1) the uncertainty values reported for cement and lime were lower than those reported in table A2.1.1. It was not clear to the ERT how the uncertainties of the various subcategories relate to the overall uncertainty for category 2A. From the values reported in NIR table 4.2.1 the ERT would expect the overall uncertainty of category 2.A to be lower. During the review, New Zealand explained that the uncertainty of category 2.A is intended to be representative of all subcategories, but that the calculation will be reviewed to ensure that it is consistently applied in the next submission. The ERT recommends that New Zealand review the calculation of the uncertainty for category 2.A and correct the values in NIR table 4.2.1 and A2.1.1, annex 2, if needed.	Yes. Accuracy
I.23	2.A.2 Lime production – CO_2	New Zealand estimates CO_2 emissions in lime production using a tier 1 method for 1990–2009 and a country-specific method for 2010–2015. For the period 1990–2009, AD and emissions were supplied annually by the lime companies and were based on the amount of burnt lime produced each year. From 2010, CO_2 emissions under the New Zealand ETS are calculated from the amount of pure product made from calcination (CaO) (NIR, section 4.2.2, pp.108 and 109). New Zealand further reported in the NIR (p.109) that the default EF used for the period 1990–2009 was 0.75 t CO_2/t lime (2006 IPCC Guidelines, volume 3, chapter 2); however, the ERT noted that in CRF table 2(I).A-Hs1 for 1990–2013 the EF reported was 0.7275 t CO_2/t lime and this value was 6 per cent lower than the CO_2 EFs reported for 2014 and 2015 (0.77 and 0.78 t CO_2/t lime, respectively). During the review New Zealand explained that "burnt lime" was in fact used as AD for 1990–2013 whereas "pure CaO" was the AD reported for 2014–2015. The Party also clarified that for 1990–2013 it used an EF (0.7275 t CO_2/t lime) which is below the IPCC default EF for high-calcium lime (0.75 t CO_2/t lime). The ERT is of the view that New Zealand should apply the IPCC default EF (0.75 t CO_2/t lime) for 1990–2013 in accordance with the information provided in the NIR (the default EF is used rather than an EF of 0.7275 t CO_2/t lime) and noted that would be possible to improve the consistency of the time series if the Party converted the AD "pure CaO" for 2014 and 2015 to "burnt lime" (by considering that burnt lime is 97 per cent pure CaO), which would result in an EF of around 0.75 t CO_2/t lime. The ERT believes that future ERTs should consider this issue further to ensure that there is not an underestimate of emissions from lime production in 2013 due to the application of the lower CO_2 EF, noting that adjustments cannot be applied to New Zealand's annual submission. The ERT recommends that New Zealand report in CRF table 2(I).A-Hs1 a consistent type of AD for lime production for all years (e.g. by converting "pure CaO" to "burnt lime" using an appropriate conversion factor) and apply the default EF from	Yes. Accuracy

	Finding	Description of the finding with reference to relevant UNFCCC reporting guidelines	Is finding an issue and/or a problem[a] If yes, classify by type
		the 2006 IPCC Guidelines for 1990–2013 accordingly. In addition, the ERT recommends that the Party update the description in the NIR to correctly reflect the AD and EFs used and to clarify the assumptions and methods applied for 1990–2013 and 2014 onwards.	
I.24	2.B.1 Ammonia production – CO_2	New Zealand stated in its NIR (section 4.3.1, p.111) that "the ammonia produced is further processed into urea for use as a fertiliser in New Zealand". The ERT noted that according to footnote 5 of CRF table 2(I).A-Hs1 "Parties shall provide an overview in the NIR in which other source categories of the GHG inventory CO_2 emissions from significant uses of urea are reported"; however, there was no indication in the NIR (under the IPPU section) of whether CO_2 emissions from urea were reported under category 3.H (urea application). The ERT also noted that urea may also be used as a consumable in selective catalytic reduction of diesel exhaust emissions. During the review, New Zealand explained that urea used as fertilizer (both urea made in New Zealand and imported urea) is reported in category 3.H and informed the ERT that it will revise the text in the next NIR to include this information. The Party also clarified that New Zealand does not report any use of urea for catalytic reduction in diesel exhaust emission control. In response to a request made by the ERT, the Party provided estimates for urea used for catalytic reduction using diesel consumption in road transport and applying equation 3.2.2 from the 2006 IPCC Guidelines (volume 3, chapter 3.2.1.1, p.3.12). The estimates provided during the review suggest that the likely level of emissions from urea use in selective catalytic reduction is below the insignificance threshold for GHG emissions in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines. The ERT recommends that New Zealand clarify in the NIR (section 4.3.2) that urea used as fertilizer is reported under category 3.H. The ERT also recommends that New Zealand either: (a) provide an estimate for urea use in selective catalytic reduction (under category 2.D.3) in line with the 2006 IPCC Guidelines; or (b) provide a justification for its exclusion in terms of the likely level of emissions, in accordance with the requirements in paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines.	Yes. Transparency
I.25	2.B Chemical industry – CO_2	New Zealand reported in its NIR (annex 2, p.438, table A2.1.1) the uncertainty analysis (including LULUCF) in accordance with approach 1 from the 2006 IPCC Guidelines. The ERT noted that, for chemical industry, the AD uncertainty is reported as ±2 per cent and the EF uncertainty is ±6 per cent for all CO_2 emissions reported for category 2.B. The ERT noted that the values reported in the uncertainty analyses for AD and EF are the default uncertainties for ammonia production, in accordance with the 2006 IPCC Guidelines (volume 3, chapter 3.2.2.2, p.3.15); however, for New Zealand, under category 2.B the ERT noted that CO_2 emissions also originate from hydrogen production (category 2.B.10) and from calcium carbide use (category 2.B.5.b). Therefore, the ERT requested the Party to provide evidence to show that the uncertainties (±2 per cent and ±6 per cent, respectively) also apply for categories 2.B.10 and 2.B.5.b. New Zealand replied that the uncertainty is intended to be representative of all subcategories, but that the calculation will be reviewed to ensure that it is consistently applied in the next submission. The ERT recommends that New Zealand review the calculation of the uncertainties for category 2.B and correct the values given in the NIR (annex 2, table A2.1.1) if necessary.	Yes. Accuracy

ID[1]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and or a problem?[2] If yes, classify by type
I.26	2.C.1 Iron and steel production – CO_2	In response to a previous recommendation (see ID# I.13 in table 3) New Zealand provided in the NIR (section 4.4.2, p.116) a schematic flowchart of iron and steel production. During the review, the Party provided a balance of carbon inputs and outputs for the years 2014 and 2015 for the two integrated iron and steel plants in New Zealand (New Zealand Steel and Pacific Steel). The ERT noted that the carbon balance for New Zealand Steel covers all relevant carbon flows (taking into account that some carbon inputs from this steel plant are considered under category 2.A.4.d to preserve the confidentiality of the glass producers – see ID# I.12 in table 3). However, the ERT noted that CO_2 emissions from electric steel production at the Pacific Steel plant are not completely taken into account. In the carbon balance, emissions from natural gas use are considered, but emissions from carbon in input material (such as steel scrap) and from electrode consumption are missing. The ERT believes that future ERTs should consider this issue further to ensure that there is not an underestimate of emissions from these activities, noting that adjustments cannot be applied to New Zealand's annual submission. The ERT recommends that New Zealand estimate CO_2 emissions from electric steel production at the Pacific Steel plant, either by using a carbon balance or by applying an appropriate EF, and report these emissions under category 2.C.1.	Yes. Completeness
I.27	2.C.3 Aluminium production – PFCs	New Zealand reported in its NIR (section 4.4.2, p.117) that data on the duration of anode effects at the smelter are available for 1993 to 2014 and therefore a tier 2 method is used in this period for estimating PFC emissions. For 1990 and 1991 the data on anode effects are not available and therefore it applied a tier 1 method using a technology-based default EF. However, the ERT noted that in CRF table 2(II)B-Hs1 the default EF (0.4 kg CF_4/t aluminium in 1990 and 1991) is considerably higher than the EF reported for the later years (for example, 0.09 kg/t aluminium in 1993 and 0.02 kg/t aluminium in 2015), which may indicate a potential overestimation of emissions in 1990 and 1991. During the review, New Zealand clarified that the decision to use a tier 1 method for 1990 and 1991 was made on the basis of advice from the smelter operators (New Zealand Aluminium Smelters Ltd) that their operational practices had changed between 1990 and 1994. In the years up to 1992/1993, the operational strategy allowed the occurrence of frequent anode effects to avoid a build-up of alumina on the bottom of the cells. Starting in 1994, better monitoring and control technology allowed for this practice to change, and allowed for better monitoring and reporting of the frequency and duration of anode effects. For this reason, the operators advised that the performance from 1994 onwards would not be representative for earlier years. Based on this clarification, the ERT noted that the use of a default EF is justified for the years 1990 and 1991. The ERT recommends that New Zealand improve the description in the NIR of the reasons for the choice for using a tier 1 method for 1990 and 1991, including the information provided to the ERT during the review, explaining that operational practices changed and that up to 1992–1993 the operational strategy allowed the occurrence of frequent anode effects and after 1993 a better monitoring and control technology in aluminium production allowed for a change in operational practice, which reduced the occurrence of anode effects and which explains the decrease in emissions and in the EF between the years 1990–1991 and later years.	Yes. Transparency
I.28	2.C.4 Magnesium production –	New Zealand reported in the NIR (annex 2, p.438, table A2.1.1) the uncertainty analysis (including LULUCF) in accordance with approach 1 from the 2006 IPCC Guidelines. The ERT noted that for SF_6 emissions from magnesium casting the AD uncertainty is reported as 100 per cent and the EF uncertainty is reported as "zero". However, the ERT noted that in the NIR	Yes. Transparency

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and/or a problem[c]? If yes, classify by type
	SF_6	(p.119, table 4.4.2) the Party reported the opposite and AD uncertainty was reported as "zero" and EF uncertainty was reported as 100 per cent. In addition, the uncertainty used by New Zealand seems to be very high because, according to the 2006 IPCC Guidelines (volume 3, chapter 4, p.4.68), an uncertainty of 30 per cent is given as "uncertainty in the assumption that 100 per cent of the SF_6 used is emitted". During the review, New Zealand clarified that when the data were originally collected, the small-scale use of SF_6 in a foundry had already stopped, and no accurate AD were available, which explains the high uncertainty level. The ERT recommends that New Zealand: correct NIR table 4.4.2 (p.119) to reflect that AD uncertainty is 100 per cent and EF uncertainty is reported as "zero"; and state in the NIR that for SF_6 emissions from magnesium casting, a country-specific uncertainty is used rather than the IPCC default uncertainty and explain the reason for it.	
I.29	2.D.1 Lubricant use – CO_2	The ERT noted significant changes in the CO_2 IEF from lubricant use between 2013 and 2015 in CRF table 2(I).A-Hs2 (2013/2014 (–29.2 per cent), 2014/2015 (23.1 per cent)). During the review, New Zealand explained that emissions were averaged for the period 2011–2014, in part because 2014 was an outlier for unknown reasons. The 2015 amount was added for the current submission but the averaging of data for 2011–2014 was not extended to include 2015 because this would have required a small recalculation of the 2011–2014 data. The ERT recommends that, if an outlier is found in the estimates of lubricant use, the Party consider averaging the AD before estimating emissions, rather than averaging the emission data. The ERT also recommends that the Party revise its estimates for 2011–2014 to improve consistency of the time series and include 2015 data in the assumption to avoid significant changes in the CO_2 IEF.	Yes. Consistency
I.30	2.F. Product uses as substitutes for ozone-depleting substances – HFCs	New Zealand reported in the NIR (p.127, table 4.7.3) the uncertainties for product uses as substitutes for ozone-depleting substances (category 2.F). It was not clear to the ERT whether the uncertainty of ±35 per cent for the overall category 2.F, as presented in the NIR (annex 2, p.438, table A.2.1.1) is derived from the uncertainties of the subcategories presented in NIR table 4.7.3, which range between ±26 per cent and ±49 per cent. In response to a question raised by the ERT, New Zealand explained that the emissions for category 2.F are estimated using a mass balance approach and that this approach uses data on imports of each gas as an input. Therefore, it would not be appropriate to combine the uncertainties of the various subcategories because they are not independent variables. The ERT recommends that New Zealand explain, in section 4.7.3 of the NIR, which approach (other than a combination of uncertainties) was used to derive the uncertainty of ±35 per cent, presented in NIR table A.2.1.1.	Yes. Transparency
I.31	2.F.1 Refrigeration and air conditioning – HFCs	The ERT noted that, according to CRF table 2(II)B-Hs2 for the year 2015 the product life factors for HFC-143a in commercial refrigeration and for HFC-134a in industrial refrigeration are above the ranges given in the 2006 IPCC Guidelines (volume 3, table 7.9). For HFC-143a in commercial refrigeration the Party reported a value of 37.2 per cent compared with the IPCC default of 1–35 per cent, depending on the type of commercial refrigeration, while for HFC-134a in industrial refrigeration, the Party reported a value of 40.4 per cent, compared with an IPCC default of 7–25 per cent. The factors reported by the Party suggest that more than a third of these gases is lost annually on average by commercial and industrial refrigeration equipment.	Yes. Accuracy

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and/or a problem[a]? If yes, classify by type
		During the review, New Zealand explained that in the mass balance approach used for category 2.F, commercial use of HFC-143a and industrial use of HFC-134a are treated as residuals, which results in higher product life factors and a higher uncertainty for these sub-applications. The ERT noted, however, that in CRF table 2(II)B-Hs2, there is a decrease in average annual stocks in recent years, which may be the reason for the high product life factors. The ERT recommends that New Zealand review the data underlying the estimation of HFC emissions from commercial and industrial refrigeration, in particular the development of average annual stocks in recent years. The ERT also recommends that New Zealand provide, in section 4.7.2 of the NIR, a brief explanation for the exceptionally high product life factors of HFC-143a and HFC-134a, respectively, in these categories.	
I.32	2.F.1 Refrigeration and air conditioning – HFCs	New Zealand reported in the NIR (section 4.7.2, p.124) that a trend of –2 per cent is applied to the average charge of HFC-134a in cars from 2010 onwards, based on the trend observed between 2000 and 2010 (see ID# I.17 in table 3). New Zealand also reported that it imports a large variety of vehicles, many of them used cars, and it is not feasible to obtain accurate and up-to-date statistics on the refrigerant charge in these vehicles. However, the Party has not provided any study or an expert judgment that supports the application of the same trend from 2010 onwards to the average charge of HFC-134a in cars. In addition, New Zealand has not updated the refrigerant charges to include data from the more recent years. During the review, the ERT noted that a report provided by New Zealand during the review (CRL Energy Ltd, 2016), mentions that "detailed fleet statistics (with import/export figures) are available and that a previous study (CRL Energy Ltd, 2010) provided a more detailed understanding of refrigerant charges". In response, New Zealand explained that fleet statistics are available but given the large variety of vehicle types and the preponderance of used vehicles being imported, these do not provide a basis to update the average charge in air-conditioning systems. New Zealand pointed out that the charge quantities are applied to the vehicles added to the fleet in a given year only, not to the overall fleet, and that they are an input to the estimates of changes to the bank over time and emissions from the fleet. New Zealand also informed the ERT that it expects to be able to source better data for the 2018 submission by surveying vehicle importers, both for updated estimations of the charge in air-conditioning systems and to evaluate the use of non-HFC refrigerants which are starting to appear. The ERT recommends that New Zealand update the average charge of HFC-134a for the years from 2010 onwards by taking into consideration the cars added to the fleet in recent years, based on data available from importers and/or from fleet statistics.	Yes. Accuracy
Agriculture			
A.4	3. General (agriculture) – CH_4	The ERT noted that there is no information in the NIR on whether New Zealand estimates emissions from ostrich farms. During the review, New Zealand explained that ostrich farming is extremely rare in New Zealand. In 2015 it was estimated that there were around 739 ostriches in the country, and the majority of these were on a very small number of farms. The Party also explained that ostriches and emus are included in the category other poultry (under minor livestock species, NIR section 5.1.4, p.145) and their emissions are calculated using tier 1 methods. The ERT recommends that New Zealand provide in its NIR the list of livestock species included in the category other poultry	Yes. Transparency

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and or a problem[20] If yes, classify by type
		and provide explanations regarding the methodology it uses to estimate emissions and EFs for ostriches and emus.	
A.5	3.A.4 Other livestock – CH_4	The ERT noted that there is no information in the NIR as to whether the practice of breeding/growing of rabbits and fur-bearing animals (e.g. minks, foxes) occurs in New Zealand. During the review, New Zealand explained that farms in New Zealand are not involved in the breeding or raising of fur-bearing animals or of rabbits, which are regarded as an agricultural pest. The ERT recommends that New Zealand provide information on the breeding of rabbits and fur-bearing animals in its NIR.	Yes. Transparency
LULUCF			
L.2	4. General (LULUCF) – CO	The ERT noted that in CRF table 4, New Zealand reported CO emissions from categories 4.A.1 (forest land remaining forest land) (6.08 kt CO in 2015) and 4.C.1 (grassland remaining grassland) (7.10 kt CO in 2015); however, the origin of these emissions was not clear to the ERT as no explanation was included in the NIR. During the review, the Party explained that its biomass burning model produces estimates of CO gas for these two categories and they are reported in the CRF tables accordingly. The Party also explained that reporting of this gas is optional and their origin is not explained in the NIR. The ERT understands that reporting of CO emissions is optional but for increasing transparency and consistency of the information between the NIR and the CRF table it encourages the Party to include an explanation of the origin of CO emissions for categories 4.A.1 and 4.C.1 in its NIR.	Not an issue/problem
L.3	4.A Forest land – CO_2	New Zealand reported in the NIR (section 6.4.5, p.273) in relation to harvesting estimates in post-1989 forests, that "longer rotation crops are assumed to be harvested at the oldest possible age in a given year (e.g. age 25 in 2015)". However, it was not clear to the ERT on which assumption it was based. During the review, the Party clarified that the average harvest age in New Zealand production forests is around 28 years and therefore the post-1989 forest estate can be no older than 25 years as at 2015, with the exception of around 500 hectares of post-1989 forest that are harvested at 12 years old each year as a feedstock for the pulp and paper industry. The remaining post-1989 harvest area is assumed to be harvested at the oldest age possible (e.g. 25 years in 2015). However, it was not clear to the ERT how New Zealand evaluates the case when the harvesting age assumption is not confirmed in practice, and whether there is a risk of overestimation of removals. New Zealand explained that there is a risk of overestimation of emissions by assuming harvesting forests at the oldest age possible; however, this is believed to be a small risk because the forests are likely to be harvested at their most merchantable age (e.g. at their oldest). In response to the list of provisional main findings, New Zealand further explained that there is a risk of overestimating emissions, and underestimating removals if a younger harvest age is applied to these forests instead of 25 years because the 25-year-old forests will grow on in the model and sequester more carbon than they otherwise would have. Harvesting of younger forests will also have lower harvest emissions than 25-year-old forests. The Party also explained that it has already critically analysed the harvesting age assumption for these forests and has applied the most likely assumption that the forests are harvested at the oldest age possible for these forests, apart from those that are being harvested at 12 years and are reported as such. The ERT welcomes the Party's response; however, it believes that the risk of overestimation of removals is as high as	Yes. Accuracy

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and or a problem[b] If yes, classify by type
		overestimation of emissions considering that in addition to C fluxes in the biomass pools, there are fluxes in soil and decayed organic matter pools that depend on rotation, as can be seen for some studies on eucalyptus (see Li et al., 2015; and Wei and Blanco, 2014) illustrating this complexity. Therefore, the ERT is of the view that there is still a risk of inaccurate estimation of emissions/removals owing to, for example, a voluntary decision to harvest before the average age (e.g. due to wood/land market fluctuations), and recommends that New Zealand re-analyse the harvesting age assumption on the average harvest age and recalculate the emissions if it cannot provide a justification that emissions are not overestimated or underestimated; and report the outcomes of this exercise in the NIR.	
L.4	4.A Forest land – CO_2	New Zealand reported in the NIR (section 6.4.3, p.269) that "the variation between individual plot estimates of biomass carbon change in regenerating and tall pre-1990 natural forest provides a combined uncertainty of ±126.6 per cent for the category". Given the high value of the uncertainty compared with the average uncertainty for other categories and pools, the ERT asked New Zealand to clarify whether these emissions/removals estimates are included in the category-specific planned improvements (NIR section 6.4.6, p.274). In response, New Zealand explained that it will continue to measure the natural forest plot network on a 10-year cycle and the estimates will be improved as further data become available. The Party also clarified that the high value of uncertainty reported is for the stock change, which is relatively small when compared with stock, and provided two relevant publications by Holdaway et. al (2014 and 2017). The ERT accepts the explanation provided by the Party and recommends that the Party consider ways to reduce uncertainties in the stock change estimates when further designing the systems to estimate carbon stock change in pre-1990 natural forests. In addition, the ERT encourages the Party to consider in particular the "Practical recommendation" section in Holdaway et al. (2014) (p.638) when further designing and running plot measurements in pre-1990 natural forests.	Yes. Accuracy
L.5	4.A.1 Forest land remaining forest land – CO_2	New Zealand reported in the NIR (section 6.4.2, p.259) regarding biomass estimates in pre-1990 natural forests that "Whilst the ratio of below-ground biomass to total biomass has been shown to vary from 9 per cent to 33 per cent, below-ground biomass is assumed to be 25 per cent of above-ground biomass (or 20 per cent of total biomass, as reported in Coomes et al., 2002)." However, it was not clear to the ERT how the calculation methodology provided the average value for below-ground biomass as being 25 per cent of above-ground biomass. During the review, New Zealand explained that the value of 25 per cent was based on a published study (Cairns et al., 1997). The Party acknowledged that it has not replicated the analysis and does not know which methods were used to arrive at the 25 per cent value. Because of this, New Zealand has carried out work during the past year to improve the understanding of the underlying basis for the ratio applied and now the Party has updated information on more appropriate below-ground biomass ratios to apply to natural forests. New Zealand also confirmed that it will apply these updated ratios in the subsequent analyses of natural forest plot data. The ERT is of the view that choosing a value above the median in the range 9–33 per cent without further documentation does entail a potential risk of overestimation of removals from forest land remaining forest land and recommends that the Party update the below-ground biomass ratios, or, while that update is not possible, report in the NIR on the progress on the ongoing work to update the below-ground biomass ratios.	Yes. Accuracy
L.6	4.A.2 Land converted to	The ERT noted that the assessment report identified significant inter-annual changes in category 4.A.2.4 (settlements converted to forest land) for "net carbon stock change in dead wood per area" (t C/ha), as follows: 2011/2012 (–1,326.6 per	Yes. Transparency

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and or a problem[b]? If yes, classify by type
	forest land – CO_2	cent), 2013/2014 (–448.0 per cent) and 2014/2015 (–162.7 per cent). During the review, New Zealand explained that the dead wood pool changes year on year are due to the uneven age class distribution of New Zealand's planted forests and the age-dependent forest management practices of pruning and thinning that occur in these forests. The ERT welcomes the reasoning provided, and recommends that New Zealand include information on the reasons for the inter-annual changes in the net carbon stock change in dead wood per area for category 4.A.2.4 (settlements converted to forest land), in particular the inter-annual changes observed for 2011 onwards.	
L.7	4.D. Wetlands – CO_2	The ERT noted that New Zealand reported "NE" for categories 4.D.1.1 (peat extraction remaining peat extraction) and 4.D.2.1 (land converted for peat extraction) in CRF table 4.D. During the review, New Zealand explained that it has collected data to enable the reporting of these categories and that it intends to do so for the first time in its 2018 submission. The ERT welcomes the Party's intent and recommends that the Party continue the ongoing work to improve its estimates for wetlands and report the emissions for categories 4.D.1.1 and 4.D.2.1. The ERT encourages the Party to use the Wetlands Supplement in preparing its annual inventories for these categories in future annual submissions.	Yes. Completeness
L.8	4(II) Emissions and removals from drainage and rewetting and other management of organic/mineral soils – N_2O and CH_4	The ERT noted that, in CRF table 4(II), New Zealand reported "NE" for rewetted organic soils under categories 4(II).A (forest land), 4(II).B (cropland), 4(II).C (grassland) and for organic and mineral soils under category 4(II).D (wetlands). During the review, New Zealand explained that reporting for these categories is not mandatory, and no methodologies are provided in the 2006 IPCC Guidelines. However, the ERT noted that the NIR (p.290) states that "the drainage of soils and wetlands is a relatively minor activity in New Zealand". The ERT also noted that the Party reports AD and CO_2 emission estimates for the conversion of wetlands to land-use categories in CRF tables 4.A–4.C and from other land uses to wetlands in CRF table 4.D. The ERT encourages New Zealand to use the Wetlands Supplement to estimate the emissions from this category, starting with the subcategories that have the largest area.	Not an issue/problem
L.9	4(III) Direct N_2O emissions from N mineralization/ immobilization – N_2O	The ERT noted that the NIR (p.300) makes reference to a C/N ratio of 1:15, and requested New Zealand to clarify whether the C/N ratio used in the calculation is indeed 1:15 (as indicated) or 15:1 (as given in the 2006 IPCC Guidelines). New Zealand clarified that the ratio used in its calculation is 15:1 and that equation 11.8 in the 2006 IPCC Guidelines is used for the calculation of direct N_2O emissions. New Zealand acknowledged that the text in the NIR is therefore incorrect and will be corrected in the next submission. The ERT recommends that New Zealand correct the C/N ratio to 15:1 in the NIR (p.300).	Yes. Adherence to the UNFCCC Annex I inventory reporting guidelines
Waste			
W.14	5.A.1.a Anaerobic – General	The ERT noted that in the NIR (section 7.2.2, p.319) the subheading "Municipal landfills" make an incorrect reference to category 5.A.1.b (semi-anaerobic). The correct reference should be to category 5.A.1.a (anaerobic). During the review, New Zealand acknowledged the error and informed the ERT that will update the NIR in the next submission. The ERT recommends that New Zealand update the NIR and make reference to category 5.A.1.a in the subheading	Yes. Adherence to the UNFCCC Annex I inventory reporting guidelines

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and or a problem? If yes, classify by type
		"Municipal landfills" under NIR section 7.2.2.	
W.15	5.B.1 Composting – CH_4 and N_2O	New Zealand reported "NE" for category 5.B.1 (composting municipal solid waste) and "NO" for category 5.B.2 (anaerobic digestion at biogas facilities) for AD and emissions in CRF table 5.B, for all time series. However, the ERT noted that in the NIR (p. 313, table 7.1.1, footnote) the Party reported for the entire category 5.B that "significant biological treatment of solid waste does not occur in New Zealand" and shows in figure 7.1.2 (p.314) the entire category 5.B as "NO". The ERT also noted that the NIR (section 7.3) states that a "relatively small amount of composting" exists. In addition, the ERT noted that in the NIR (annex A6.2.1) the Party justifies the reporting as "NE" and the exclusion of category 5.B.1 in terms of the likely level of emissions in accordance with paragraph 37(b) of the UNFCCC reporting guidelines (see ID#s W.11 in table 3 and W.16 below). The ERT recommends that New Zealand improve the consistency of its reporting in NIR sections 7.1.2 and 7.3, including figure 7.1.2 (p.314), to reflect that category 5.B.1 is "NE". The ERT also recommends that the Party include information on the exclusion of category 5.B.1 in terms of the likely level of emissions in the waste chapter (under the relevant section) and include a cross reference to annex A6.2.1.	Yes. Adherence to the UNFCCC Annex I inventory reporting guidelines
W.16	5.B.1 Composting – CH_4 and N_2O	New Zealand included in the NIR (annex 6, p.499) a justification for the exclusion of this category in terms of the likely level of emissions in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines in response to a previous recommendation (see ID# W.8 in table 3). However, it was not clear to the ERT which AD and parameters were used for the calculation. During the review, New Zealand informed the ERT that, in preparing the answer to the ERT, an error in the original estimate was identified and the Party provided revised emission estimates as follows: (a) Mass composted estimated from a conservative upper estimate of 1 per cent of the annual waste disposed at SWDS in 2014 (from its 2016 submission, 5.A.1.a) to give 29 kt waste composted (this is additional to waste at SWDS); (b) CH_4 emissions of 2.9 kt CO_2 eq using the default EF of 4 g CH_4/kg waste; (c) N_2O emissions of 2.1 kt CO_2 eq using the default EF of 0.24 g N_2O/kg waste. Total emissions are therefore 5.0 kt CO_2 eq (1.8 kt CO_2 eq higher than originally estimated). The CH_4 and N_2O included are each below the 0.05 per cent threshold for "NE" reporting of this category (equal to 40.08 kt CO_2 eq), and below the 0.1 per cent of total national GHG emissions (80.16 kt CO_2 eq). The ERT recommends that New Zealand update its calculation provided in the NIR to justify the use of "NE" for CH_4 and N_2O emissions from category 5.B.1 (composting) in the NIR (annex A6.2.1, p.499).	Yes. Transparency
W.17	5.C.1 Waste incineration – CH_4 and N_2O	New Zealand reported in the NIR (p.326, table 7.4.1) the EFs selected for CH_4 and N_2O for the incineration of hazardous, clinical and sewage sludge wastes. It was not clear to the ERT how the EFs (from the 2006 IPCC Guidelines) have been selected and the justification for their selection. For example, for sewage sludge the CH_4 EF in NIR table 7.4.1 (9.7 kg/kt) seems to be selected from the default EF for Japan as in the 2006 IPCC Guidelines (volume 5, chapter 5.4.2, p.5.20), and the N_2O EF (900 kg/kt) seems to be from table 5.6, p.5.21 of the 2006 IPCC Guidelines; however, no explanation or justification	Yes. Transparency

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and or a problem[b]? If yes, classify by type
		was provided in the NIR. During the review, New Zealand explained that all EFs presented in NIR table 7.4.1 are IPCC default EFs or derived from default EFs in the absence of any other evidence. The Party provided an unpublished report (SKM, 2007) and a spreadsheet containing the CH_4 and N_2O EFs selected. Default EFs (kg/TJ) for the calculation of CH_4 emissions were taken from the 2006 IPCC Guidelines (volume 2, chapter 2) and were converted to Gg/year using the gross caloric value for the relevant waste. The CH_4 default EFs were 30 kg /TJ for hazardous waste and 300 kg/TJ for clinical waste (2006 IPCC Guidelines, volume 2, chapter 2, tables 2.2 and 2.4). The Party used the gross calorific values of 12.8 MJ/kg and 16.8 MJ/kg, respectively, and the calculated CH_4 EFs were 2.34 kg/kt for hazardous waste and 17.86 kg/kt for clinical waste. No reference was provided for the CH_4 EF for sewage sludge. The ERT noted that the CH_4 EF for clinical waste in NIR table 7.4.1 (1.79 kg/kt) is 10 times lower than that provided by the Party during the review in the spreadsheet. Default N_2O EFs for a tier 1 assessment from the 2006 IPCC Guidelines (volume 5, chapter 5, table 5.6) were used in the calculation of N_2O emissions. The ERT welcomes the additional information provided by New Zealand and recommends that the Party include in the NIR an explanation of how the CH_4 and N_2O EFs were selected and provide the relevant references to the 2006 IPCC Guidelines. If the default EFs are derived, the ERT recommends that the Party explain the assumptions and how the EFs were obtained. The ERT further recommends that the Party check the value of the CH_4 EF for clinical waste in NIR table 7.4.1 (1.79 kg/kt) and in the spreadsheet (17.86 kg/kt) and correct it, as appropriate.	
W.18	5.D.1 Domestic wastewater – CH_4 and N_2O	New Zealand reported in the NIR (section 7.5.2, p.328) regarding the population connected to domestic wastewater treatment systems that "A remaining population of 0.4 million is not accounted for, which is similar to other years and is considered unlikely to be significant within the accuracy of the calculations" (Tonkin and Taylor Ltd, unpublished). During the review, the Party informed the ERT that it is unknown what type of treatment systems serve this population group and that no relevant data exist and therefore emissions cannot be accounted for. The ERT noted that only populations connected to well-managed aerobic wastewater treatment facilities can be assumed to generate no emissions from this category, in accordance with the 2006 IPCC Guidelines (volume 5, chapter 6, table 6.3) and that the unaccounted population group therefore represents a likely underestimation of emissions from this category. In response, New Zealand acknowledged that there is likely to be an underestimation of emissions from this category, and noted that the size of this population group has grown significantly since the assumption was originally made. The Party informed the ERT that is considering applying an average population inflation factor to all known populations served by wastewater treatment plants to account for emissions from this group. The ERT believes that future ERTs should consider this issue further to ensure that there is not an underestimate of emissions, noting that adjustments cannot be applied to New Zealand's annual submission. Given the lack of statistical data for this population group, the ERT recommends that New Zealand apply an average population inflation factor to all known populations served by wastewater treatment plants to estimate emissions for category 5.D.1 and provide the associated justification of methods and assumptions in the NIR. The ERT also encourages New Zealand to explore the statistical weaknesses in its current approach to gathering AD for category 5.D.1 in order to better understand the utilization of wastewater treatment facilities for this unallocated population group, and therefore the accuracy of its	Yes, Accuracy

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and or a problem[b]? If yes, classify by type
		emission estimates.	
W.19	5.D.1 Domestic wastewater – N_2O	New Zealand reported in CRF table 5.D the factor for co-discharge of industrial nitrogen into sewers protein as 0.25 and the factor to adjust for non-consumed protein as 0.40. The ERT noted that both values are lower than the default (1.0 to 1.5 for these parameters) in the 2006 IPCC Guidelines (volume 5, chapter 6, table 6.11). The ERT further noted that in the NIR (p.332, table 7.5.3) the Party reported 1.25 and 1.4, respectively, for these parameters, and made reference to the 2006 IPCC Guidelines default. It was not clear to the ERT which value was used in the emission estimates. During the review, New Zealand explained that the factors indicated in CRF table 5.D are those from the 2006 IPCC Guidelines (i.e. that 0.25 is the typical amount added to the domestic wastewater BOD to account for industrial and commercial discharge (that is, 0.25 + 1.0); and that 0.40 is the amount of additional protein added to the domestic wastewater stream (that is, 0.4 + 1.0)). The resulting correction factors are 1.25 and 1.40 times the domestic-only amount, as per the calculations. The ERT welcomes the response from the Party and recommends that New Zealand report a value of 1.25 for the industrial and commercial co-discharged protein parameter and 1.40 for the fraction of non-consumed protein in CRF table 5.D.	Yes. Adherence to the UNFCCC Annex I inventory reporting guidelines
KP-LULUCF			
KL.3	General (KP-LULUCF) – CO_2, N_2O and CH_4	Based on the analysis of the text in the NIR (section 6.2.3 regarding surrogate data methods used in the inventory and section 11.2.3 regarding the geographical location of activities under Article 3, paragraph 3, of the Kyoto Protocol), and with reference to the Kyoto Protocol Supplement (table 2.2.1), on the relationship between "approaches" in chapter 3 of the 2006 IPCC Guidelines and "reporting methods" in the Kyoto Protocol Supplement, it was not clear to the ERT how the surrogate data methods are reconciled with reporting method 2 for afforestation/reforestation and deforestation activities and approach 3 for mapping land-use change. During the review, New Zealand explained that because of the use of surrogate data to estimate land-use change between mapping activities, it would be more accurate to say that the methodology is a combination of approaches 2 and 3 and reporting methods 1 and 2. The ERT recommends that New Zealand enhance the internal coherence of the NIR and its adherence to the reporting guidelines under Article 7, paragraph 1, of the Kyoto Protocol, by including the correct approaches and methods used.	Yes. Transparency
KL.4	Forest management – CO_2	The ERT noted that the 'steady state' of carbon stock is referred to in several land-use categories for both biomass and soil carbon pools (e.g. NIR, p.244, table 6.3.2, and section 6.3.3, p.248) and asked the Party to explain the methodological assumptions for considering land-use categories reaching this state in the land-use categories remaining in the same categories over time (i.e. related or not to land management measures). During the review, New Zealand confirmed that "the steady state is assumed for (a) natural land uses (e.g. natural forests), where the land has never been subject to a land use change (for organic soil estimates), (b) low producing and high producing grasslands, (c) grassland with woody biomass, (d) perennial and annual cropland for biomass stock change, and (e) the mineral soils pool for all lands uses. For all categories that have been subject to a land use change, where organic soils occur, emissions from organic soils continue to be reported irrespective of whether the land has reached steady state or not. For forest land, emissions and removals from biomass continue to be	Yes. Transparency

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and or a problem[c]? If yes, classify by type
		reported after the land has reaching steady state for mineral soils, as growth, harvest, mortality etc. and/or forest management practices continue on these lands." The ERT is of the view that the tier 2 methods are adequate within the scope of the reporting under the Convention. However, the ERT would like to single out the case of mineral soils estimates for the three subdivisions of forest land (CRF table 4.A), directly linked to the forest management estimates under the Kyoto Protocol (CRF table 4(KP-I)B.1), which are assessed as "0". In this respect, the ERT makes reference to decision 2/CMP.7, which specifies that a Party may choose not to account for a given pool, except for harvested wood products, in a commitment period, if transparent and verifiable information is provided that the pool is not a source. On this basis, the ERT requested New Zealand to provide further evidence in support of the "pool not a source" assumption for mineral soil in FM estimates, following the approaches indicated in section 2.3.1 of the Kyoto Protocol Supplement. In response, the Party explained that it models the effects of land use and land-use change based on empirical measurements of mineral soil data collected from each land-use subcategory in steady state, specifically to model the land-use change and management effects, and that the validation of the models has been carried out. The pre-1990 forests are subdivided into natural and planted forest types, which allows the different management methods to be taken into account. The Party also made reference to the 2006 IPCC Guidelines (volume 4, chapter 4, p.4.23), which states that "the current knowledge remains inconclusive on both the magnitude and direction of C stock changes in mineral forest soils associated with forest type, management and other disturbances, and cannot support broad generalizations". The ERT welcomes the additional information provided by the Party, and recommends that the Party include relevant information in the NIR in support of the mandatory requirement to demonstrate that the mineral soil pool under FM activity is not a source, following the guidance in section 2.3.1 in the Kyoto Protocol Supplement.	
KL.5	Afforestation and reforestation – CO_2	Under category 4.A.2 (land converted to forest land), New Zealand reported in the NIR (p.264) that, for post-1989 forests, it has made a clear distinction in terms of characteristics and estimation methods between planted forests and natural forest, which are represented accordingly in CRF table 4.A. However, the ERT noted that in CRF table 4(KP-I)A.1 only the aggregated area is reported as 647.56 kha for 2015. It was not clear to the ERT how much of the 647.56 kha belongs to planted forests and natural forest in CRF table 4.A, as well as the rationale for the aggregated representation in CRF table 4(KP-I) A.1. During the review, New Zealand explained that the area of post-1989 natural forests is reported in the NIR (p.267) and that it totalled 41,913 ha in 2015. The remaining 605,645 ha of the total area reported in 2015 was therefore post-1989 planted forest. The rationale for the aggregated reporting in the CRF table 4(KP-I)A.1 is that the detail is provided in CRF table 4.A, and therefore does not need to be repeated in CRF table 4(KP-I)A.1. The ERT accepts the explanation provided by the Party and recommends that New Zealand include in the NIR synthesized information on the correspondence between forest land (i.e. the area of planted forest versus natural forest as presented in CRF table 4.A) and AR areas reported in CRF table 4(KP-I)A.1.	Yes. Transparency
KL.6	Afforestation and reforestation –	The ERT noted the information in the NIR (sections 6.2.3 and 11.3.2) regarding surrogate data sets on AR used for the periods 1990–2007 and 2008–2012 and asked the Party to indicate whether and how the provisions of the Kyoto Protocol Supplement (chapter 2, sections 2.5.1 and 2.5.2) are applied in order to demonstrate that: (a) the AR areas meet the forest definition; (b)	Adherence to reporting guidelines under Article 7.

ID	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and/or a problem[a]? If yes, classify by type
	CO_2	AR is directly human-induced and differentiated from natural expansion and/or restocking; and (c) the geographical location of the boundaries of the areas that encompass lands subject to AR activities are identifiable. Regarding the period 2008–2012, New Zealand referred to section 6.2.3 of its NIR, which explains that afforestation occurring from 2008 onwards has been estimated using the national exotic forest description data set. This data set only tracks production forestry planting activity and is therefore limited to direct human-induced exotic forest planting which meets the forest definition. Most of this new planting (74 per cent) has been captured in the 2012 land-use map, and is therefore spatially defined; however, some areas of new planting are not visible in the 2012 satellite imagery and therefore their location is not defined. Following completion of the 2016 land-use map it is expected that all areas of afforestation occurring between 2008 and 2012 will be spatially delineated in the 2016 map. Regarding the period 1990–2007, New Zealand explained that the spatial extent of afforestation occurring between 1990 and 2007 is explicitly mapped at 2007 from satellite imagery. A comparison with 1990 satellite imagery was made to ensure that each area of forest was not present at 1990 and can therefore be classed as post-1989 forest (an illustration of this decision process can be found in the NIR (figure 6.2.4)). Although the location and size of afforestation areas can be determined from satellite imagery dated at 1990 and 2007, the year of planting cannot be determined. New Zealand has insufficient data to make this determination, so planting data from the national exotic forest description report have been used to apportion the mapped afforestation into planting years. In this way, the planting trends of the national exotic forest description are applied to the inventory while retaining the total area of afforestation as mapped at 31 December 2007. The ERT agrees with the justification provided by the Party and recommends that New Zealand include in the NIR the information provided to the ERT during the review on how surrogate data sets on AR used for the periods 1990–2007 and 2008–2012 are applied in order to demonstrate that: (a) the AR areas meet the forest definition; (b) AR is directly human-induced and differentiated from natural expansion and/or restocking; and (c) the geographical location of the boundaries of the areas that encompass lands subject to AR activities are identifiable.	paragraph 1, of the Kyoto Protocol
KL.7	Deforestation – CO_2, CH_4 and N_2O	The ERT noted the information in the NIR (sections 6.2.3 and 11.3.2) regarding surrogate data sets on deforestation used for the periods 1990–2007 and 2008–2012 and asked the Party to indicate whether and how the provisions of the Kyoto Protocol Supplement (chapter 2, section 2.6.1) are applied in order to demonstrate that deforestation areas meet the forest definition, distinguishable from, for example, the subcategory grassland with up to 30 per cent woody biomass and that the geographical location of the boundaries of the areas that encompass lands subject to deforestation activities are identifiable. Regarding the period 1990–2007, New Zealand explained that surrogate data sets are used to estimate the timing of deforestation only, using satellite imagery at 1990 and 2007, respectively. From 2008 onwards deforestation mapping has been based on annual observations of forest loss from satellite imagery and field checking every two years to confirm land-use change. This allows the geographical locations of all areas of deforestation to be fully mapped every two to three years. For inventories in the intervening years, an estimate of the area of deforestation is made based on the Deforestation Intentions Survey carried out by the New Zealand Ministry for Primary Industries. This means that the spatial location of areas of deforestation occurring in the most recent year(s) is often not known at the time of reporting. Areas identified as meeting the forest definition are distinguished from other areas with woody biomass by evaluating the land use context to determine whether the vegetation is at least 5 m in height, with a canopy cover of at least 30 per cent and is of at least 1 ha in area.	Yes. Transparency

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and/or a problem[b]? If yes, classify by type
		Evidence is also obtained from the New Zealand Government's forestry schemes, including the New Zealand ETS. Also, evidence of direct human-induced land-use change is used where, for example, grassland has been retired and fenced to exclude stock or actively restored through planting. Other evidence includes proximity to tree line, and other environmental factors such as temperature and soil type are used to distinguish between forest land and, for example, grassland with woody biomass. The ERT further asked New Zealand to provide information on tracking areas deforested until 2007 back to the three forest subcategories (pre-1990 natural forests; pre-1990 planted forests; and post-1989 forests). New Zealand responded that deforestation of pre-1990 forests occurring between 1990 and 2007 is based on mapping carried out at those two dates. Forests are classified into pre-1990 natural forest and pre-1990 planted forest based on their spectral signature in satellite imagery captured close to 1 January 1990. Emissions from the deforestation of post-1989 forests are reported in CRF table 4(KP-I)A.2 along with all other deforestation emissions from other forests in aggregated form. Regarding the information item on post-1989 forests, New Zealand confirmed that it does not report any reforested post-1989 land that has previously been deforested and therefore reports "NO" in row 28 in CRF table 4(KP-I)A.2. Regarding deforestation in post-1989 forests, the Party also made reference to the information contained in the NIR (pp.365 and 366) and provided the ERT with a spreadsheet with information on area and emissions reported for deforestation. The ERT was therefore able to understand the information item on pre-1990 planted forests in row 27 in CRF table 4(KP-I)A.2 indicating that 0.15 kha represent areas that were planted forests as at 1990, deforested after 1990, and reconverted subsequently to planted forests (i.e. standing as at the reporting date). The ERT recommends that New Zealand include in the NIR the additional information provided to the ERT during the review, explaining (a) how the forest definition is distinguishable from, for example, the subcategory grassland with up to 30 per cent woody biomass; and (b) the geographical location of the boundaries of the areas that encompass lands subject to deforestation activities. In addition, the ERT recommends that the Party include in the NIR the information contained in the spreadsheet provided to the ERT during the review on the split of the areas for deforestation.	
KL.8	Forest management – CO_2	It was not clear to the ERT how forest land was related to forest management activities. For example, for 2015 it was unclear which part of the 9,905.02 kha forest land in CRF table 4.A corresponds to the 9,257.31 kha of forest management activity in CRF table 4(KP-I)B.1. During the review, the Party explained that the forest management activity area includes all land reported as forest land remaining forest land (category 4.A.1), that is, 9,204.70 kha, plus a further 52.80 kha of the 700.3 kha reported under land converted to forest land (category 4.A.2) that occurred before 1990. However, the Party also explained that owing to the 28-year transition time the forest management activity areas are still reported (in CRF table 4.A) as follows: (1) under category 4.A.2.2, grassland with woody biomass converted to pre-1990 natural forest, 3.13 kha; high producing grassland converted to pre-1990 planted forest, 0.06 kha; low producing grassland converted to pre-1990 planted forest, 21.58 kha; grassland with woody biomass converted to pre-1990 planted forest, 27.98 kha; and (2) under category 4.A.2.5, other land converted to pre-1990 planted forest, 0.00 kha. The ERT welcomes the clarifications provided by New Zealand and recommends that the Party include information in the NIR on which areas/categories of forest land (as in CRF table 4.A) are related to the areas of forest management in CRF table	Yes. Transparency

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and or a problem?[a] If yes, classify by type
		4(KP-I)B.1.	
KL.9	Forest management – CO_2	In response to previous recommendations (see ID#s KL.1 and KL.2 in table 3) New Zealand updated the information and reported in NIR annex 5.1 on technical corrections to the FMRL. The ERT noted that this annex indicates that the AD for carbon equivalent forest is 2,247 ha/year while in CRF table 4(KP-I)B.1.2 no value on carbon equivalent forests is included. During the review, New Zealand explained that technical corrections to the FMRL were required to address methodological inconsistencies between the methods used to calculate the 2011 FMRL and the currently used reporting methods. Assumptions for the amount of carbon equivalent forest occurring each year have not been changed for the technical corrections. The assumption made in the 2011 FMRL was for carbon equivalent forest AD to be 2,000 ha/year (which is adjusted to 2,247 ha/year to address methodological inconsistency with the reporting methods) and this still applies. However, uptake of the carbon equivalent forest provision has been lower than expected, and New Zealand had no data on this activity ready to report in the 2017 NIR. Recently this situation has changed and New Zealand has begun to obtain data on this activity, with the intention of reporting on carbon equivalent forest in the 2018 submission. The ERT recommends that New Zealand report on the area subject to the carbon equivalent forest provision and associated emissions in CRF table 4(KP-I)B.1.2, starting with the next submission, and provide additional information on the difference between the assumptions on carbon equivalent forest AD made in the original/revised FMRL submissions and the actual AD in the GHG inventory.	Yes. Comparability
KL.10	Wetland drainage and rewetting – CH_4 and N_2O	New Zealand reported "NE" for all categories in CRF table 4 KP(II).2 – CH_4 and N_2O emissions from drained and rewetted organic soils. During the review, New Zealand confirmed that it does not estimate CH_4 and N_2O emissions from drained and rewetted soils. The ERT is of the view that even though the share of areas of organic soils make a relatively small fraction of the total areas subject to afforestation, reforestation and deforestation and FM activities (below 0.5 per cent for each of the activities reported under CRF tables 4(KP-I)A.1; 4(KP-I)A.2; and 4(KP-I)B.1) the ERT encourages New Zealand to estimate these emissions based on the methodologies set out in the Wetlands Supplement.	Not a problem

[a] Recommendations made by the ERT during the review are related to issues as defined in paragraph 81 of the UNFCCC review guidelines, or problems as defined in paragraph 69 of the Article 8 review guidelines. Encouragements are made to the Party to address all findings not related to such issues or problems.

VI. Application of adjustments

9. New Zealand does not have a quantified emission limitation or reduction commitment in the second commitment period of the Kyoto Protocol and therefore the application of adjustments does not apply.

VII. Accounting quantities for activities under Article 3, paragraph 3, and, if any, activities under Article 3, paragraph 4, of the Kyoto Protocol

10. New Zealand does not have a quantified emission limitation or reduction commitment in the second commitment period of the Kyoto Protocol and does not account for KP-LULUCF activities.

VIII. Questions of implementation

11. No questions of implementation were identified by the ERT during the review.

Annex I

Overview of greenhouse gas emissions and removals for New Zealand for submission year 2017 and data and information on activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, as submitted by New Zealand

1. Tables 6–10 provide an overview of total GHG gas emissions and removals as submitted by New Zealand.

Table 6

Total greenhouse gas emissions for New Zealand, base year[a]–2015

(kt CO_2 eq)

	Total GHG emissions excluding indirect CO_2 emissions		*Total GHG emissions including indirect CO_2 emissions*[b]		*Land-use change (Article 3.7 bis as contained in the Doha Amendment)*[c]	*KP-LULUCF activities (Article 3.3 of the Kyoto Protocol)*[d]	*KP-LULUCF activities (Article 3.4 of the Kyoto Protocol)*	
	Total including LULUCF	*Total excluding LULUCF*	*Total including LULUCF*	*Total excluding LULUCF*			*CM, GM, RV, WDR*[e]	*FM*
FMRL								11 150.00
Base year	34 451.43	64 573.82	NA	NA	NA			
1990	34 451.43	64 573.82	NA	NA				
1995	37 595.94	68 447.75	NA	NA				
2000	42 774.45	75 142.80	NA	NA				
2010	47 462.99	78 077.20	NA	NA				
2011	51 792.44	77 951.12	NA	NA				
2012	54 446.07	79 929.55	NA	NA				
2013	55 242.18	79 397.17	NA	NA		−9 365.16	NE, NA	−13 237.14
2014	56 471.91	80 267.87	NA	NA		−9 538.18	NE, NA	−13 261.44
2015	56 372.51	80 155.14	NA	NA		−12 535.32	NE, NA	−12 106.23

Note: Emissions/removals reported in the sector other (sector 6) are not included in total GHG emissions.

[a] Base year refers to the base year under the Kyoto Protocol, which is 1990 for all gases. For activities under Article 3, paragraph 3, of the Kyoto Protocol and FM under Article 3, paragraph 4, only the inventory years of the commitment period must be reported.

[b] The Party has not reported indirect CO_2 emissions in CRF table 6.

[c] The value reported in this column refers to 1990.

[d] Activities under Article 3, paragraph 3, of the Kyoto Protocol, namely AR and deforestation.

[e] In accordance with decision 3/CMP.11, paragraph 8, New Zealand previously reported that it will not report on any activities under Article 3, paragraph 4, of the Kyoto Protocol.

Table 7

Greenhouse gas emissions by gas for New Zealand, excluding land use, land-use change and forestry, 1990–2015

(kt CO_2 eq)

	CO_2	*CH_4*	*N_2O*	*HFCs*	*PFCs*	*Unspecified mix of HFCs and PFCs*	*NF_3*	*SF_6*
1990	25 428.64	32 522.20	5 693.06	NO, NA	909.95	NA	19.97	NA
1995	28 151.65	33 597.24	6 466.83	57.87	149.75	NA	24.42	NA
2000	32 358.64	35 297.09	7 152.93	246.20	67.61	NA	20.34	NA
2010	35 017.74	34 046.81	7 782.56	1 158.82	47.41	NA	23.85	NA
2011	34 332.22	34 165.81	8 027.00	1 370.97	35.15	NA	19.97	NA
2012	35 654.67	34 626.37	8 216.36	1 362.30	47.46	NA	22.38	NA
2013	35 086.94	34 608.32	8 242.24	1 391.62	48.13	NA	19.92	NA
2014	35 584.98	34 800.29	8 400.69	1 390.37	73.41	NA	18.13	NA
2015	35 911.43	34 191.91	8 451.85	1 523.50	58.59	NA	17.85	NA
Per cent change 1990–2015	**41.2**	**5.1**	**48.5**	**NA**	**–93.6**	**NA**	**–10.6**	**NA**

Note: Emissions/removals reported in the sector other (sector 6) are not included in total GHG emissions.

[a] New Zealand did not report indirect CO_2 emissions in CRF table 6.

Table 8

Greenhouse gas emissions by sector for New Zealand, 1990–2015

(kt CO_2 eq)

	Energy	*IPPU*	*Agriculture*	*LULUCF*	*Waste*	*Other*
1990	23 748.50	3 584.36	33 122.91	–30 122.39	4 118.05	
1995	25 869.80	3 209.34	34 983.73	–30 851.81	4 384.88	
2000	30 001.99	3 462.02	37 067.47	–32 368.35	4 611.31	
2010	32 184.55	4 655.46	36 861.67	–30 614.21	4 375.52	
2011	31 272.51	4 826.41	37 590.15	–26 158.68	4 262.05	
2012	32 466.20	4 811.47	38 460.38	–25 483.48	4 191.51	
2013	31 906.16	4 925.18	38 450.41	–24 154.99	4 115.43	
2014	32 269.10	5 067.03	38 847.04	–23 795.96	4 084.71	
2015	32 455.18	5 279.68	38 419.63	–23 782.63	4 000.66	
Per cent change 1990–2015	**36.7**	**47.3**	**16.0**	**–21.0**	**–2.9**	

Notes: (1) Emissions/removals reported in the sector other (sector 6) are not included in total GHG emissions. (2) New Zealand did not report indirect CO_2 emissions in CRF table 6. (3) The sector other is left blank in the CRF tables for New Zealand.

Table 9

Greenhouse gas emissions/removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol by activity, base year[a]–2015, for New Zealand

(kt CO_2 eq)

	Article 3.7 bis as contained in the Doha Amendment[b]	*Article 3.3 of the Kyoto Protocol*		*FM and elected Article 3.4 activities of the Kyoto Protocol*				
	Land-use change	*AR*	*Deforestation*	*FM*	*CM*	*GM*	*RV*	*WDR*
FMRL				11 150.00				
Technical correction				–17 245.26				
Base year	NA							
2013		–15 704.07	6 338.92	–13 237.14	NE, NA	NE, NA	NE	NE
2014		–15 803.31	6 265.13	–13 261.44	NE, NA	NE, NA	NE	NE
2015		–16 001.16	3 465.84	–12 106.23	NE, NA	NE, NA	NE	NE
Per cent change Base year–2015					**NA**	**NA**	**NA**	**NA**

Note: Values in this table include emissions on lands subject to natural disturbances, if applicable.

[a] New Zealand has selected not to report on any activities under Article 3, paragraph 4, of the Kyoto Protocol. For activities under Article 3, paragraph 3, of the Kyoto Protocol and FM under Article 3, paragraph 4, only the inventory years of the commitment period must be reported.

[b] The value reported in this column refers to 1990.

2. Table 10 provides an overview of relevant key data for New Zealand's reporting under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

Table 10
Key relevant data for New Zealand under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

Key parameters	*Values*
Periodicity of accounting	NA
Election of activities under Article 3, paragraph 4	None
Election of application of provisions for natural disturbances	Yes, for AR and FM
3.5% of total base-year GHG emissions, excluding LULUCF and including indirect CO_2 emissions	2 303.993 kt CO_2 eq (18 431.946 kt CO_2 eq for the duration of the commitment period)
Cancellation of AAUs, ERUs, CERs and/or issuance of RMUs in the national registry for:	
1. AR in 2015	NA
2. Deforestation in 2015	NA
3. FM in 2015	NA
4. CM in 2015	NA
5. GM in 2015	NA
6. RV in 2015	NA
7. WDR in 2015	NA

Annex II

Additional information to support findings in table 2

Missing categories that may affect completeness

The categories for which methods are included in the 2006 IPCC Guidelines that were reported as "NE" or for which the ERT otherwise determined that there may be an issue with the completeness of reporting in the Party's inventory are the following:

(a) CO_2, CH_4 and N_2O emissions from solid fuels for category 1.A.1.c manufacture of solid fuels and other energy industries (see ID# E.7 in table 3);

(b) CH_4 emissions from abandoned coal mines for category 1.B.1.a coal mining and handling (see ID# E.14 in table 3);

(c) CO_2 emissions from steel production for category 2.C.1 iron and steel production (see ID# I.26 in table 5);

(d) CO_2 emissions from peat extraction remaining peat extraction and land converted for peat extraction for category 4.D wetlands (see ID# L.7 in table 5).

Annex III

Documents and information used during the review

A. Reference documents

Reports of the Intergovernmental Panel on Climate Change

IPCC. 2006. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. S Eggleston, L Buendia, K Miwa, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies. Available at http://www.ipcc-nggip.iges.or.jp/public/2006gl/.

IPCC. 2014. *2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol*. T Hiraishi, T Krug, K Tanabe, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies.
Available at http://www.ipcc-nggip.iges.or.jp/public/kpsg.

IPCC. 2014. *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*. T Hiraishi, T Krug, K Tanabe, et al. (eds.). Geneva: IPCC.
Available at http://www.ipcc-nggip.iges.or.jp/public/wetlands/.

Annual review reports

Reports on the individual review of the 2013, 2014, 2015 and 2016 annual submissions of New Zealand, contained in documents FCCC/ARR/2013/NZL, FCCC/ARR/2014/NZL, FCCC/ARR/2015/NZL and FCCC/ARR/2016/NZL, respectively.

Other

Aggregate information on greenhouse gas emissions by sources and removals by sinks for Parties included in Annex I to the Convention. Note by the secretariat. Available at http://unfccc.int/resource/webdocs/agi/2017.pdf.

Annual status report for New Zealand for 2017. Available at http://unfccc.int/resource/docs/2017/asr/nzl.pdf.

Beca Infrastructure Ltd. 2007. *National Greenhouse Gas Inventory from Wastewater Treatment and Discharge*. Report commissioned by the Ministry for the Environment in 2007. (unpublished report).

Cairns MA, Brown S, Helmer EH and Baumgardner GA. 1997. Root biomass allocation in the world's upland forests. *Oecologia*. 111: pp.1–11.

Coomes DA, Allen RB, Scott NA, Goulding CJ and Beets PN. 2002. Designing systems to monitor carbon stocks in forests and shrublands. *Forest Ecology and Management*. 164: pp.89–108.

CRL Energy Ltd. 2010. *Inventory of HFC, SF_6 and Other Industrial Process Emissions for New Zealand 2009*. A report by CRL Energy Ltd to the Ministry for the Environment in 2010. (unpublished report).

CRL Energy Ltd. 2016. *Inventory of HFC, SF_6 and Other Industrial Process Emissions for New Zealand 2015*. A report by CRL Energy Ltd to the Ministry for the Environment in 2016. (unpublished report).

Holdaway RJ, McNeill SJ, Mason NWH and Carswell FE. 2014. Propagating Uncertainty in Plot-based Estimates of Forest Carbon Stock and Carbon Stock Change. *Ecosystems*. 17(4):pp.627–640.
Available at https://link.springer.com/content/pdf/10.1007%2Fs10021-014-9749-5.pdf.

Holdaway RJ, Easdale TA, Carswell FE, Richardson SJ, Peltzer DA, Mason NWH, Brandon AM and Coomes DA. 2017. Nationally Representative Plot Network Reveals Contrasting Drivers of Net Biomass Change in Secondary and Old-Growth Forests. *Ecosystems*. 20(5):pp.944–959.

Available at https://link.springer.com/content/pdf/10.1007%2Fs10021-016-0084-x.pdf.

Li X, Ye D, Liang H, Zhu H, Qin L, Zhu Y and Wen Y. 2015. Effects of Successive Rotation Regimes on Carbon Stocks in Eucalyptus Plantations in Subtropical China Measured over a Full Rotation. *PLoS One*. 10(7).
Available at https://www.ncbi.nlm.nih.gov/pubmed/26186367.

New Zealand Government. 2017. *Climate Change (Stationary Energy and Industrial Processes) Regulations 2009* (as at 1 January 2017). Available at http://www.legislation.govt.nz/regulation/public/2009/0285/latest/versions.aspx.

SKM (Sinclair Knight Merz). 2007. *Greenhouse Gases from the Waste Incineration Sector*. Report commissioned by the Ministry for the Environment in 2007. (unpublished report).

Tonkin and Taylor Ltd. 2011. *National Greenhouse Gas Emissions from Wastewater Sludge*. Report commissioned by the Ministry for the Environment in 2011. (unpublished report).

Wei X and Blanco JA. 2014. Significant Increase in Ecosystem C Can Be Achieved with Sustainable Forest Management in Subtropical Plantation Forests. *PLoS One*. 9(2).
Available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3933645.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Olia Glade (Ministry for the Environment), including additional material on the methodology and assumptions used. The following documents[1] were also provided by New Zealand:

SKM (2009). Unpublished. Estimates of landfill methane recovered in New Zealand 1990–2012. Report commissioned by the Ministry for the Environment in 2009.

[1] Reproduced as received from the Party.